Acknowledgements

The papers in this volume were submitted by George Mason University students.and reviewed by members of the GMU linguistics faculty. The Linguistics Club would like to express special appreciation to Steven Weinberger and Charlie Jones for their insights, advice and patience. Without their unfailing support and encouragement these papers may have been written but the task of writing them could never have been so joyful. Any successes we may have in future work in the field of Linguistics belong to this dedicated faculty.

We would like to thank the Student Funding Board for the funding of this project.

The help of Sheryl Sherwin, Szilvia Oszko, and Sarah Simcox in proofreading the papers is also greatly appreciated.

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SEUSSISMS AND VIOLATIONS TO UNIVERSAL LANGUAGE CONSTRAINTS

Kathleen Baker

INTRODUCTION

This paper will take an in depth view of Dr. Seuss' form of neologisms. Are his writings simply for the entertainment of children or is there a deeper purpose and structure to his use of language? Appropriately stated in *On Beyond Zebra*, "You'll be sort of surprised what there is to be found, once you go beyond Z and start poking around!" (Geisel, 1983, p. 6).

Theodor Seuss Geisel "brought significant changes to the world of children's book publishing in late 1957, when he released *The Cat in the Hat*. [It] challenged the idea that primers for young readers were limited to dull stories by . . . restricted vocabulary." (Hedblad, ed. 1999, v. 100, p. 106). *The Cat in the Hat* consisted of 223 "easy words, swift rhymes and batty nonsense [which] convinced thousands of . . . children that reading could be fun . . ." (Hedblad, ed., p. 107).

Geisel wrote and illustrated forty-four children's books and two adult fiction books under the pseudonym of Dr. Seuss. The same pseudonym bore six additional titles illustrated by other artists. Geisel also wrote under the pseudonyms of Theo. LeSieg and Rosetta Stone, each bearing twelve titles and one title respectively.

With "a compulsive search for perfection in word, rhythm and drawing" (Morgan, 1995, p. xvii), Geisel said that he "stay[ed] with a line until the meter [was] right, and the rhyme [was] right even if it [took him] five hours . . . the core of his spirit was a child's sense of fun and curiosity." (Morgan, p. xix). This curiosity lead him to create such words as thwerll (Geisel, 1978c, p. 21), zlock (Geisel, 1974b, p. 5), and gwark (Geisel, 1978c, p. 50). But, what do these new words really teach children about their language? Prescriptively speaking, nothing! Phonologically speaking, volumes!

The focus of this paper will be to determine whether "seussisms" are (1) lexical holes in the English language lexicon, (2) possibilities in any human language lexicon or (3) violations of Universal Language Constraints. Part I of this paper will define the English language segment structure and syllable structure constraints. Part II will briefly discuss Universal Language Constraints. Part III will analyze "seussisms" for possible violations to these constraints. And, finally, Part IV will identify some phonotactic rules used to create "seussisms."

PART I: ENGLISH SEGMENTS AND SYLLABLE STRUCTURE

The English language segment inventory represents 23 consonantal phonemes, with place of articulation ranging from bilabial to glottal. Nearly half of these phonemes are produced along the alveolar ridge and represent 5 manners of articulation: stop, nasal, fricative, glide and liquid.

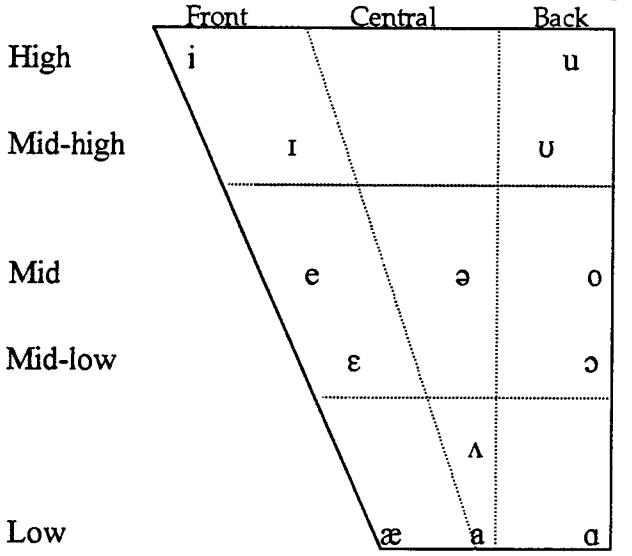
Additionally, there are 13 vowels represented in this inventory.

The following charts (expanded from Ladefoged) illustrate all possible phonemes in the English language.

English Consonant Inventory (Ladefoged, 1993, p. 37)

	Bilabial	Lab-Dent	Dental	Alveolar	Pal-alveo	Palatal	Velar	Glottal
Nasal	m			n			ŋ	
Stop	p b			t d			k g	ʔ
Fric.		f v	θ ð	s z	ʃ ʒ			h
Glide				ɹ		j	w	
Liquid				l				

English Vowel Inventory (Ladefoged, p. 38)



The English syllable system consists of 11 syllable structures. These structures are phonological units which organize segments in terms of sonority. (Blevins, 1996, p. 207).

The following chart identifies all possible English syllable structures.

English Syllable System (Blevins, p. 217)

V	CV	CVC	VC	CCV	CCVC	CVCC	VCC	CCVCC	CVCCC	CCCVC

Based on these syllable structures, the following constraints placed upon English segments create a sharp rise in sonority from the syllable onset to the nucleus and a gradual fall from the nucleus to the coda (Clements, 1988):

(1) Word or syllable-initial consonant clusters must not share place of articulation, specifically *[[labial][labial]], *[[coronal][coronal]] and *[[strident][strident]]. e.g. *[pw], *[tl], *[fv]. The coronal [ɹ], however, violates this rule by "freely combining with coronals [t, d, θ]. (Kenstowicz, 1996, p. 257). e.g. [tɹ], [dɹ], [θɹ]

(2) Word or syllable final consonant clusters must share place of articulation, as in ring [rɪŋg], lift [lɪft] and lint [lɪnt].

PART II: UNIVERSAL LANGUAGE CONSTRAINTS

The universal language segment inventory, illustrated by the appendixed IPA chart, consists of 58 known consonantal segments, 86 possible consonantal segments and 32 humanly impossible consonantal segments. Additionally, there are 28 vowels represented in this inventory.

The universal language syllable inventory can be simply illustrated by the following chart.

Universal Syllable Inventory (Clements, 1998, p. 67)

Univer.	CV			
	CV	V		
	CV	CVC		
	CV	V	CVC	VC

(1) closed syllables implies corresponding open syllables
(2) vowel-initial implies consonant initial type

(3) non-occurring: *V, VC; *CVC, VC; *CV, C, VC; *CV, CVC, VC

This chart states that "all languages have CV syllable . . . structures" (Blevins, 1996, p. 217). And, "all languages exhibit the following property: if clusters of *n* Cs are possible syllable-initially, then clusters of *n*-1 Cs are also possible syllable-initially, and if clusters of *n* Cs are possible syllable-finally, then clusters of *n*-1 Cs are also possible finally" (Blevins, p. 217). Additionally, if a language, such as English, allows syllables consisting solely of V, then it allows V-initial syllables (Blevins, p. 217).

These universal syllable structures are governed by a universal syllable constraint, namely the Sonority Sequencing Constraint (SSC). This universal is based on the symmetry of "the initial and final segments of a syllable structure with regard to their degree of sonority" (Tropf, 1986, p. 175). Each syllable consists of a vowel, the sonority peak, and peripheral segments. These peripheral segments are "ordered in such a way that . . . sonority declines from the syllable peak" (Tropf, p. 175) out-ward. "Sonority violations [will] occur almost exclusively at the margins of the word . . ." (Kenstowicz, 1996, p. 262). The following scale defines the Sonority Sequencing Constraint.

Sonority Sequencing Scale (Tropf, 1986, p. 176)

Stop←Fricative←Nasal←Liquid←Glide←←**Vowel**→→Glide→Liquid→Nasal→Fricative→Stop

In addition, the Obligatory Contour Principle (OCP) constrains universal syllable structures by prohibiting adjacent identical elements at the phonological level (Ingram, 1995, p. 68). Violations to the OCP are language specific. Should an OCP violation arise in a language, phonotactic rules such as deletion, epenthesis or metathesis are triggered (Yip, 1988, pp. 73-74).
Examples of OCP violations would be: *[[place][place]] as in sg. bus→pl. [bʌsəz]
Where a schwa is epenthesized between two fricatives and, *[root][root] as in
next time [nɛkstaɪm], where one of the dental stops is deleted.

PART III: SEUSS ANALYSIS

definition: "neologism *n.* 1. A new word or phrase or an existing word used in a new sense" (Webster, 2nd ed., p. 877).

Defining the word neologism also defines a "seussism." "Seussisms" are often colorful nonsensical words used to gain a child's interest in reading. This paper will determine what percentage of "seussisms" are lexical holes in the English language lexicon, what percentage are possibilities in any human language lexicon and what percentage are violations of Universal Language Constraints.

Sixty-five books, authored by Theodor Seuss Geisel, have been examined for this study. Over eight hundred neologisms were found. And, one "seussism" has been accepted into the English language lexicon.

To facilitate analysis, the "seussisms" have been divided into nine categories: (1) phonetic English, (2) fleen, (3) fneen, (4) fteen, (5) OCP triggered phonotactic rules, (6) inflectional morphology, (7) derivational morphology, (8) minimal pairs, and (9) miscellaneous word play. The first four categories are of immediate interest and will be addressed first.

(1) Phonetic English: Neologisms in this category are orthographically incorrect versions of lexical items that have the same phonetic representation as their correct counterparts. Geisel, for example, would use Webster's phonetic transcription as orthographic representation. e.g. "goulash" (goo'lash) (Webster, 2nd ed., p. 561) becomes the neologism"goolash" (Geisel, 1967a, p. 4). The IPA transcription [gulɔʃ] is phonetically the same for both "goolash" and goulash. See Appendix B for a complete listing of neologisms under this category.

(2) Fleen: Neologisms in this category are not English words, but could be. There are no English language specific violations of segment or syllable constraints, nor are there violations of Universal Language Constraints. These are lexical holes in the English language lexicon. For example, "flepped" [flɛpt] (Geisel, 1965b, p. 26) consists of segments contained in the English language segment inventory and adheres to the syllable structure constraint of CCVCC. Additionally, the segments within the onset consonant cluster do not share place of articulation and adhere to the SSC. Segments within the syllable final consonant cluster, however, do share place of articulation as allowed in English.

Another example, "quirkles" [kwɪɹklz] (Geisel, 1970, p. 4), has the syllable structure of CCVCC and also adheres to these constraints. See Appendix C for a complete listing of neologisms in this category.

(3) Fneen: Neologisms in this category do not adhere to English language constraints and therefore, must be considered possible lexical items in other languages. For example, zlock [zlɔk] (Geisel, 1974b, p. 5) has the syllable structure CCVC and violates the English syllable structure constraint by having two adjacent coronals in the onset cluster. It does, however, respect the Sonority Sequencing Constraint. See Appendix D for a complete listing of neologisms in this category.

(4) Fteen: Neologisms in this category can be classified as possible lexical items found in non-human language lexicons. These words violate not only language specific constraints, but Universal Language Constraints governed by Universal Grammar (UG). Take for example, the word "glnbokk" [glnbɔk] (Morgan, 1995, p. 69). Despite adherence to universal segment and syllable structure inventories, "glnbokk" violates the SSC. The violation occurs within the syllable initial consonant cluster [glnb]. The first two segments [gl] adhere to the SSC while the following two segments [nb] direct acoustic energy away from the sonority peak and, therefore, violates the SSC by reversal.

Another example of this type of neologism is "humpf" [hʌmpf], as in "humpf-humpf -a-dumpfer" (Geisel, 1983, p. 13). There are no universal segment or syllable structure inventory violations, yet the reversal of the acoustic energy between the two final segments of the coda creates aberrance in sonority and violates the SSC. The result of this violation is "an inarticulate expression resembling a snort or grunt", as defined by Webster (p. 636). See Appendix E for a complete listing of neologisms in this category.

PART IV: PHONOTACTIC RULES, MORPHOLOGY AND WORD PLAY

Neologisms "flourish most where official academic bodies cannot repress [them] . . . (Yaguello, 1998, p. 41), specifically in children's minds. "Seussisms", like all neologisms, actualize the morphological composition of a word (Yaguello, p. 41) and energizes the imagination of a child. "Seussisms" are, in the words of Gertrude Stein, "intellectual recreation" (Yageullo, p. 86). This section will identify examples of OCP triggered phonotactic rules, inflectional morphology, derivational morphology, minimal pairs and miscellaneous word play.

Phonotactic Rules: Most of the phonotactic rules noted in Geisel's writings are author motivated as opposed to resultant OCP violations. Some of the output remains the same, however. One example from *The Butter Battle Book* shows where syllable initial *[[coronal][coronal]] begs deletion: "snatch them" [snætʃ ðem] becomes "snatchem" [snætʃ em] (Geisel, 1984, p. 17). Epenthesis can be seen in the example "squigglies" [skwɪgliz], where the onset cluster [gl] is broken apart: "squiggilies" [skwɪgɪliz] (Geisel, 1970, p. 6). Paragogue can be seen in an example from *Bartholomew and the Oobleck*, where Geisel enriches minimal pairs: "fist, wist, mist" becomes "fista, wista, mista" (Geisel, 1977, p. 8). See Appendix F for complete listing of neologisms in this category.

Inflectional Morphology: At least 15 morphemes were identified, ranging from prescriptively accepted prefixes and suffixes such as un-, -ed, -er, -est, -ish, etc. to manufactured suffixes such as -oo, -ie and -ses. Geisel often used morphology "illegally" in order to create "seussisms." For example, "best" [bɛst] became "bested" [bɛstəd] (Geisel, 1984, p. 11) and "quack" [kwæk] became "quacker-oo" [kwækəɹu] (Geisel, 1991a, p. 40). See Appendix G for a complete listing of neologisms in this category.

Derivational Morphology: "The figurative use of language . . . results in shifts of meaning" (Yaguello, 1998, p. 110). Geisel often used derivational morphology to illegally shift from one word class to another. For example, "slingshot (*n.*)" became "slingshotted (*v.*)" (Geisel, 1984, p. 11) and "bigger" (*adv.*) became "biggered" (*v.*) (Geisel, 1971, p. 39) and "biggering" (*v.*) (Geisel, 1971, p. 39). In another example, Geisel implies a change in word class by assigning the adjective "atrocious" to a NP, making it a N -- "a spotted atrocious" (Geisel, 1956, p. 36). The majority of derivational "seussisms" are best described on the syntactic level, whereby two Ns combine to form a larger NP as in "zooski" (Geisel, 1978c, p. 44) or an A combines with an V to form an AP, as in "woozy-snoozing" (Geisel, 1987, p. 13), and so on. See Appendix H for a complete listing of neologisms in this category.

Minimal Pairs: Geisel's writings reflect his "compulsive search for perfection in word [and] rhythm . . ." (Morgan, 1995, p. xvii). He uses minimal pairs to "color" verse with imagination, rhyme and meter, as in "donuts, dumplings, blueberry bumplings" (Geisel, 1967a, p. 5)

and "Shuffle, duffle, muzzle, muff Fista, wista, mista-cuff" (Geisel, 1977, p. 8). Others examples, which are for the youngest of readers are: "Pup in cup" (Geisel, 1991b, p. 4) "Mouse on house" (Geisel, 1991b, p. 6) and "Pat sat on hat" (Geisel, 1991b, p. 27). See Appendix I for a complete listing of neologisms in this category.

Miscellaneous Word Play: Geisel "took words and juggled them, twirled them, bounced them off the page . . . [his] message was clear . . . words are fun . . ." (Morgan, 1995, p. 290). He created neologisms "when English seemed too skimpy" (Morgan, p. 290). His writings, rich in rhyme, were imbedded with "subtle messages on issues important to him, from internationalism to environmentalism" (The Associated Press, 9/26/91). They "maintained [a] universal cry for fairness, wonder and love" (Morgan, p. 291). Through frivolous verse and rhyme, Geisel brushed away negative learning filters, encouraging children to read and enjoy themselves -- morality and language acquisition was subliminal. Often, Geisel injected advanced vocabulary into his writings, where it remained undetected. The following examples are some of his tricks.

Advanced Vocabulary:

> "The Assosee-eye-ation has built just for you a railway with very particular boats that are pulled through the air by Funicular Goats." (Geisel, 1959, p. 14)

Advanced Vocabulary and Minimal Pairs:

"I was racing pell-mell when I heard a voice yell" (Geisel, 1984, p. 30). Here, minimal pairs "yell" and "pell-mell" are encapsulated in rhyme and meter. At first glance, "pell-mell" might appear to be a neologism, but it is not.

Onamodepoedia:

"Dibble, dibble, dibble, drip, drip, drip!" (Geisel, 1967a, p. 35) mimics rain drops.

Slips of the Tongue:

"One Buffalo Bill. And one Biffalo Buff" (Geisel, 1961a, p. 41).

Paronymic Sequence:

". . . there are no better pets than the Time-Telling Fish that Gitz gets and Getz gets" (Geisel, 1959, p. 32).

The following chart illustrates the % categories where the over eight hundred "seussisms" are found.

	%
Phonetic English	7%
Fleen	51%
Fneen	.8%
Fteen	1.5%
Phonotactics	1.6%
Infl.Morphology	6%
Der.Morphology	24%
Minimal Pairs	6%
Word Play	2%

See Appendix J for a complete listing of neologisms in this category.
See Appendix K for complete listing of all neologisms gathered.

CONCLUSION

In the early stage of language acquisition, a child can articulate an overwhelming number of sounds which never come together in a single language (Yaguello, 1998, p. 52). At some point, children lose sounds which are foreign to the language they are acquiring, as well as some belonging to their target language (Yaguello, p. 53). Despite temporary regression, children recognize lost phonemes, but must relearn how to articulate them (Yaguello, p. 53). The child must learn to "identify . . . subtle boundaries between sounds . . . and [how] they generate differences in meaning. Phonemes closely resembling one another are difficult to distinguish, and therefore, word games such as tongue twisters help children learn to make these distinctions (Yaguello, p. 53). Geisel recognized childrens' inherent sensitivity to the sounds of language and thus based his writings on minimal pairs, paronymic sequences, onomatopoeia, etc. His writings dispelled popular belief that children could only learn to read from stiff "Dick and Jane" primers. And, he recognized that children unknowingly draw upon Universal Grammar in acquiring their language -- nothing needed to be memorized. Geisel's nonsense verse proved that "grammaticality is a fuzzy-edged concept" (Yaguello, p. 118). What may be prescriptively incorrect may be descriptively correct.

In conclusion, "seussisms" prescriptively teach children nothing! Phonologically, they teach children volumes about their language! For example, "syllable onsets in English are defined by a combination of Universal [Grammar] and language-particular information" (Kenstowicz, 1996, p. 259). Children have inherent knowledge of how a language works and know when a Universal Language Constraint is violated. "Seussisms" help them recognize these violations as well as help them parameterize English language segment and syllable structure constraints.

This study found that "seussisms" typically do not violate English language or Universal Language segment and syllable structure inventories, but do violate English language and Universal Language syllable structure constraints. There is, however, one example from "*The Idioms of Iceland at a Glance*": "mnpf" [mnpf] (Morgan, 1995, p, 69), where a Universal Language Syllable structure violation occurs. All human language syllables must contain a V.

The following chart identifies what percentage of "seussisms" violate the English language and Universal Language Constraints.

	English Segment	Eng.Syl.Violation	Univer.Segment	SSC
Phonetic English	0	0	0	0
Fleen	0	0	0	0
Fneen	0	.8%	0	0
Fteen	0	0	.1%	1.4%
Phonotactics	0	0	0	0
Infl.Morphology	0	0	0	0
Der.Morphology	0	0	0	0
Minimal Pairs	0	0	0	0
Word Play	0	0	0	0

These violations were not the result of Geisel's inability to draw upon Universal Grammar, but by personal design.

Post Script
(General Interest)

(1) Theodor Seuss Geisel's "contributions to . . . language [are] cited in two reference books published in 1992: *The Oxford Companion to the English Language* uses fourteen lines from *Fox in Socks* when discussing "compounds in context"; the sixteenth edition of *Bartlett's Familiar Quotations*, edited by Justin Kaplan, includes references from *Horton Hatches the Egg* and *The Cat in the Hat"* (Morgan, 1995, pp. 291-292).

(2) One neologism has been accepted in the English language: "grinch".

Webster's definition:
grinch (grinch), *n.* a person or thing that spoils or dampens the pleasure of others. [1965-70; from the *Grinch*, name of a character created by Dr. Seuss (Theodore Seuss Geisel)] (Webster, 2nd ed., p. 572).

(3) Geisel used three pseudonyms: Dr. Seuss, Theo LeSieg and Rosetta Stone. Le Sieg is Geisel spelled in reverse.

(4) Out of Print Books:

Geisel, T. S. 1976. *Hooper Humperdinck . . .? by Theo. LeSieg [pseud.].* New York: Random House, Inc.
Geisel, T. S. 1999. *Please try to Remember the First of Octember! by Theo. LeSieg [pseud.].* New York: Random House, Inc. RE-ISSUE 4/15/99
Geisel, T. S. 1975. *Would You Rather Be a Bullfrog? by Theo. Le Sieg [pseud.].* New York: Random House, Inc.

(5) Geisel wrote for many magazines in the late 1920s. *Life*, a humor magazine was published from 1883 to 1936. Reference in this paper to "*Idioms of Iceland*" came from issue July 26, 1929. It may be possibly be found in Life, Vol.1 AP101.l6 from Library of Congress.

(6) *The Cat in the Hat*, the first book Geisel wrote specifically for beginning readers did not contain any neologisms.

(7) "*Green Eggs and Ham* is the third-largest selling book in the English language. Ever" (Retrospective Exhibition Catalogue, 1986, p. 17)

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APPENDIX A

APPENDIX B

Phonetic English

(Neologisms: orthographically incorrect, but phonectically correct)

NEOLOGISM	ENGLISH	IPA	WEBSTER
The 500 Hats of Bartholomew Cubbins			
didd 1	did	[dɪd]	
snipps 20	snips	[snɪps]	
g-r-r-zapp 29	zap	[zæp]	
klay 31	clay	[kleɪ]	
The Butter Battle Book			
kick-a-poo 20	pooh	[pu]	
poo-a-doo 20	do	[du]	
witz 22	wits	[wɪtz]	
miz 33	Ms.	[mɪz]	
The Cat in the Hat Songbook			
goolash 4	goulash	[gulɔʃ]	(goo'lash)
stroodles 5	strudels	[stɹudl̩z]	(strood'l)
woosh 53	whoosh	[wʊʃ]	(woosh)
Did I Ever Tell You How Lucky You Are?			
bumm 6	bum	[bʌm]	
snoor 13	snore	[snoʊɹ]	
goor 13	gore	[goʊɹ]	
krock 44	crock	[kɹɔk]	(krok)
Dr. Seuss's ABC			
doo 12	do	[du]	
lopp 28	lop	[lɔp]	
knox 54	knocks	[nɔks]	
offt 38	oft	[ɔft]	
Dr. Seuss's Sleep Book			
mercedd 14	Merced, CA	[meɹɛd]	
krox 28	crocks	[kɹɔks]	
dofft 38	doffed	[dɔft]	
Happy Birthday to You!			
hi-sign-and-shake 6	high	[haɪ]	
getz 32	gets	[gɛtz]	
Horton Hatches the Egg			
mayzie 1	mazy	[meɪzi]	
toodle-oo 4	tootle	[tuɹl̩]	
oooh 34	oh	[oʊ]	
How the Grinch Stole Christmas!			
grinch 3	grinch	[gɹɪntʃ]	
crumpit 38	crumpet	[kɹʌmpət]	
I'm Not Going To Get Up Today!			
brrnnng 2	bring	[bɹɪŋ]	
I Can Draw it Myself by Me, Myself			
hoo-fish 7	who	[hu]	
stine 8	stein	[stem]	
chantz 12	chance	[tʃænts]	

NEOLOGISM	ENGLISH	IPA	WEBSTER
I Can Lick 30 Tigers Today! and Other Stories			
katz 17	cats	[kæts]	
fooie 23	phooey	[fuwi]	(foo'e)
klunker-klunk 44	clunk	[klʌŋk]	
If I Ran the Circus			
frumm 14	from	[fɪʌm]	
lassoo 18	lasso	[læsou}	
super-stoo-pendus 28	stupendous	[stupendəs]	(stoo pen'dəs)
If I Ran the Zoo			
chuggs 33	chugs	[tʃʌgz]	
The King's Stilts			
binn 2	bin	[bɪn]	
The Lorax			
nitch 29	niche	[nɪtʃ]	
Brown Can Moo! Can You?			
klopp 5	clop	[klɔp]	
splatt 13	splat	[splæt]	
Oh, Say Can you Say?			
finney 2	finny	[fɪni]	
dinn 4	din	[dɪn]	
slinkey 14	slinky	[slɪŋki]	
stinkey 14	stinky	[stɪŋki]	
briggs 20	brigs	[bɪɪgz]	
klotz 25	clots	[klɔtz]	(klot)
Oh, the Places You'll Go!			
footsy 8	footsie	[fʊtzij]	
On Beyond Zebra!			
nitches 18	niches	[nitʃəz]	
spazzim 26	spasm	[spæzəm]	
gekko 38	gecko	[gɛko]	
nubb 42	nub	[nʌb]	
Scrambled Eggs Super!			
grinch 10	grinch	[gɹɪntʃ]	
stroodel 18	strudel	[stɹudl̩]	
klammering 32	clammering	[klæməɹɪŋ]	
The Sneetches and Other Stories			
klonked 9	clonked	[klɔŋt]	
butt 41	but	[bʌt]	
Thidwick: The Big-Hearted Moose			
skat 17	scat	[skæt]	
The Tooth Book			
klucks 19	clucks	[clʌks]	

APPENDIX C

Fleen
(Lexical holes)

NEOLOGISM	IPA	NEOLOGISM	IPA
The 500 Hats of Bartholomew Cubbins			
cubbins 1	[kʌbmz]	derwin 2	[dəɹwɪn]
flupp 17	[flup]	alaric 19	[æləɹɪk]
screebees 22	[skɹibiz]	nadd 23	[næd]
g-r-r-zibb 29	[gəɹɪzɪb]	g-r-r-zopp 29	[gəɹɪzɔp]
malber 31	[malbəɹ]	balber 31	[bɑlbəɹ]
tidder 31	[tɪdəɹ]	tudd 31	[tʌd]
winkibus 31	[wɪŋkɪbʌs]	tinkibus 31	[tɪŋkɪbʌs]
fotichee 31	[fɔtɪtʃi]	gleap 31	[glip]
Bartholomew and the Oobleck			
oobleck 10	[oublɛk]	neeka-tave 11	[nikətɛrv]
glugg 24	[glʌg]	gloing 25	[glouŋ]
Because a Little Bug Went Ka-choo!			
ka-choo 2	[kətʃu]		
The Butter Battle Book			
yooks 4	[jʊks]	zooks 4	[zʊks]
yookeroo 12	[jʊkəɹu]	gupp 17	[gʌp]
yookie-ann 33	[jʊkiæn]	sala-ma-goo 34	[salɑmɑgu]
yookery 37	[jʊkəɹi]	lopulous 40	[lɔpulʌs]
bopulous 40	[bɔpulʌs]	klupp-klupp 41	[klʌpklʌp]
klupped 41	[klʌpt]		
The Cat in the Hat Comes Back!			
voom 57	[vum]		
The Cat in the Hat Songbook			
wuzzled 4	[wʌz̩d]	poobers 4	[pubəɹz]
wush 5	[wʌʃ]	flum 6	[flʌm]
zum 18	[zʌm]	zummer 18	[zʌməɹ]
booper 19	[bupəɹ]	boop 19	[bup]
hoo-to 33	[hutu]	foo-to 33	[futu]
boo-to 33	[butu]	dobble 35	[dɔb̩]
bicklebaum 39	[bɪkl̩bɔm]	spingel 42	[spɪŋg̩]
spungel 42	[spʌŋg̩]	sporn 42	[spoʊɹn]
The Cat's Quizzer			
zossfozzel 1	[zɔsfɔz̩]	zizzy 1	[zɪzi]
Daisy-Head Maysie			
sneetcher 5	[snitʃəɹ]	mayzie 7	[mɛɪzi]
Did I Ever Tell You How Lucky You Are?			
drize 3	[dɹɪz]	ga-zayt 8	[gɑzɛɪt]
zayt 8	[zɛɪt]	throm-dim-bu-lator 13	[θɹɔmdɪmbulɛɪtəɹ]
gick 13	[gɪk]	skrux 13	[skɹʌks]
snux 13	[snʌks]	piffulous 15	[pɪfulʌs]
dooklas 15	[duklɑs]	grooz 17	[gɹuz]
bix 18	[bɪks]		

NEOLOGISM	IPA	NEOLOGISM	IPA
Dr. Seuss's ABC			
fiffer-feffer-feff 16	[fɪfəɹfɛfəɹfɛf]	kerchoo 27	[kəɹtʃu]
quincy 40	[kwɪnsi]	tuttle-tuttle 46	[tʌɾ̩tʌɾ̩]
ubb 48	[ʌb]	vinn 50	[vɪn]
yorgenson 57	[jouɹɛnsən]	zizzer-zazzer-zuzz 63	[zɪzəɹzæzəɹzʌz]
Dr. Seuss's Sleep Book			
herk-heimer 8	[həɪkhaɪmə ɹ]	krupp10	[kɹʌp]
hinkle-horn 14	[hɪŋkl̩houɹn]	frink 17	[fɪŋk]
biggel-ball 18	[bɪgl̩bɔl]	plup 18	[plʌp]
redd-zoff 20	[ɹɛdzɔf]	mupp 26	[mʌp]
ticker 29	[tɪkə ɹ]	tocker 29	[tɔkə ɹ]
mcphail 32	[mɪkfeɪl]	foona-lagoona 34	[funəlaguna]
jedd 37	[dʒɛd]	va-vode 44	[vɑvoʊd]
zizzer-zoof 44	[zɪzə ɹzʊf]	zoofing 45	[zʊfɪŋ]
foodle 48	[fudl̩]		
Fox in Socks			
tock 14	[tɔk]	bim 36	[bɪm]
blibber 44	[blɪbə ɹ]	tweetle-beetle 49	[twiɾ̩bitɾ̩]
duddled 59	[dʌɾ̩d]	wuddled 59	[wʌɾ̩d]
Great Day for Up!			
Dill-ma-dilts 15	[dɪlmədɪlts]		
Happy Birthday to You!			
katroo 1	[kɑtɹu]	zorn 1	[zoʊɹn]
cawnt 9	[kɔnt]	shawnt 9	[ʃɔnt]
who-bubs 17	[hubʌbz]	snop 17	[snɔp]
snoppers 17	[snɔpə ɹz]	nop 17	[nɔp]
hippo-heimers 18	[hɪpouhaɪmə ɹz]	zum 38	[zʌm]
zummers 38	[zʌmə ɹz]	zumming 38	[zʌmɪŋ]
derring's 41	[dɛɹɪŋz]	dutter 43	[dʌɾə ɹ]
hiffer-back 46	[hɪfə ɹbæk]	gitz 32	[gɪtz]
gits32	[gɪtz]	klopers 35	[klɔpə ɹz]
Hooray for Diffendoofer Day!			
zizendorf 44	[zɪzəndoʊɹf]	zoofendorf 44	[zufəndoʊɹf]
diffendoof 49	[dɪfənduf]	ziffendoof 49	[zɪfənduf]
vacu-bike 50	[vækjubaɪk]	finkel 52	[fɪŋkl̩]
winkel 52	[wɪŋkl̩]		
Horton Hatches the Egg			
horton 2	[houɹtən]		
Horton Hears a Who!			
nool 1	[nul]	beezle-nut 38	[biz̩nʌt]
boom-pahs 49	[bumpɑz]	bipping 52	[bɪpɪŋ]
jo-jo 54	[dʒoʊdʒoʊ]	yopp 57	[jɔp]
How the Grinch Stole Christmas!			
chimbley 23	[tʃɪmbli]		
Hunches in Bunches			
ga-fluppted 14	[gɑflʌpt]	gee-hossa-flat 19	[dʒihɔsɑflæt]
schlupp 22	[ʃlp]	barg-ued 37	[baɪgud]

NEOLOGISM	IPA	NEOLOGISM	IPA
I'm Not Getting Up Today!			
zizz-zizz 13	[zɪz]	zazz 13	[zæz]
zuzz 13	[zʊz]		
I Can Draw it Myself by Me, Myself			
sneggs 2	[snɛgz]	quirkles 4	[kwɪɹk|z]
zidd 5	[zɪd]	zidds 5	[zɪdz]
gish 7	[gɪʃ]	yill-iga-yakk 17	[jɪlɪgəjæk]
dee 6	[di]		
hamika-snamika-bamika-bunt 18	[hæmikəsnæmɪkəbæmɪkə]		
I Can Lick 30 Tigers Today!			
looie 17	[lui]	katzen-stein 18	[kætzɛnstam]
kooie 23	[kui]	chooie 25	[tʃui]
hooie 26	[hui]	blooie 26	[blui]
prooie 26	[pɹui]	zooie 28	[zui]
katzen-bein 28	[kætzɛnbam]	blooie's 33	[bluiz]
hooie's 33	[huiz]	chooie's 33	[tʃuiz]
kooie's 33	[kuiz]	looie's 33	[luiz]
glunk 37	[glʌŋk]	blunk 44	[blʌŋk]
texa-kota-cutt 48	tɛksəkɔtəkʌt]	glunker 49	[glʌŋkəɹ]
spuggle 49	[spʌg|]	glunking 50	[glʌŋkɪŋ]
schnutz-berry 52	[ʃnʌtsbɛri]	schnutz 52	[ʃnʌts]
I Can Read with My Eyes Shut!			
snoo 21	[snu]	foo-foo 21	[fufu]
hut-zut 31	[hʌtzʌt]		
I Had Trouble in Getting to Solla Sollew			
vung 1	[vʌŋ]	quilligan 6	[kwɪlɪgən]
skritz 10	[skɹɪtz]	skrink 10	[skɹɪŋk]
wubble 12	[wʌb|]	solla 12	[sɔlə]
sollew 12	[soulu]	wubbed 14	[wʌbd]
wubble-some 14	[wʌb|sʌm]	gleeks 20	[gliks]
jicker 25	[dʒɪkəɹ]	flepped 26	[flɛpt]
flubbulous 30	[flʌbulʌs]	poozer 35	[puzəɹ]
pompelmoose 35	[pɔmp|mus]	poozers 39	[puzəɪz]
sfindex	[sfɪndəks]	slippard 53	[slɪpəɹd]
boola 54	[bulə]		
I Wish I Had Duck Feet			
kerchoo 40	[kəɹtʃu]		
If I Ran the Circus			
sneelock's 1	[snilɔks]	mcgurk 1	[mɪgəɹk]
mcgurkus 4	[mɪgəɹkʌs]	jorn 11	[joum]
olf 13	[oulf]	mysolf 13	[maɪsɛlf]
snumm 14	[snʌm]	foon 16	[fun]
walloo 18	[wəlu]	brigger-ba-root 23	[bɹɪgəɹbəɹut]
stoo-mendus 28	[stuməndʌs]	stoo-roarus 28	[stuɹoʊɹəs]
organ-mcorgan-mcgurkus 28	[oʊɹgənmɪgoʊɹgənmɪgəɹkəs]		

NEOLOGISM	IPA	NEOLOGISM	IPA
If I Ran the Zoo			
mcgrew 1	[mɪgɹu]	skeegle-mobile 12	[skigl̩moʊbil]
zomba-ma-tant 14	[zɔmbɑmɑtɑnt]	flustard 14	[flʌstəɹd]
motta-fa-potta-fa-pell 14	[mɔtɑfɑpɔtɑfɑpɛl]	joats 18	[dʒoʊts]
lunks 21	[lʌŋks]	zind 26	[zɪnd]
snerl 32	[snəɹl]	yerka 34	[jəɹkɑ]
tizzle-topped 34	tɪzl̩tɔpt]	gootch 38	[gʊtʃ]
nantasket 38	[nɑntæskət]	kartoom 40	[cɑɹtum]
The King's Stilts			
birtram 1	[bəɹtɹəm]	droon 2	[dɹun]
nizzards 5	[nɪzəɹdz]	nizzardly 10	[nɪzəɹdli]
droonish 26	[dɹunɪʃ]	g-r-r-itch 32	[gəɹɪtʃ]
The Lorax			
grickle-grass 1	[gɹɪkl̩gɹɑs]	lorax 1	[loʊɹæks]
lerkim 4	[ləɹkɪm]	miff-muffered 4	[mɪfmʌfəɹd]
moof 4	[muf]	snuvv 9	[snʌv]
gruvvulous 9	[gɹuvəlʌs]	whisper-ma-phone 9	[wɪspəɹmɑfoʊn]
slupp 10	[slʌp]	slupps 10	[slʌps]
once-ler's 10	[wʌnsləɹz]	snergelly 10	[snəɹgəli]
swomee-swans 12	[swɔmiswɔnz]	truffula 12	[tɹʌfulɑ]
bar-ba-loots 14	[bɑɹbəluts]	rippulous 15	[ɹɪpəlʌs]
humming-fish 15	[hʌmɪŋfɪʃ]	ga-zump 20	[gɑzʌmp]
sitch 29	[sɪtʃ]	snarggled 40	[snɑɹgl̩d]
cruffulous 40	[kɹʌfəlʌs]	smogulous 40	[smɔgəlʌs]
gluppity-glupp 44	[glʌpɪti]	scholoppity-schlopp 44	[ʃlʌpɪtiʃlʌp]
glumping 47	[glʌmpɪŋ]		
Marvin K. Mooney, Will You Please Go Now!			
zike-bike 8	[zaɪkbaik]	crunk-car 13	[kɹʌŋkɑɹ]
zumble-zay 17	[zʌmbl̩zeɪ]	ga-zoom 20	[gɑzum]
Maybe You Should Fly a Jet! Maybe You Should Be a Vet!			
foice 38	[fɔɪs]		
McElligot's Pool			
umbross 8	[ʌmbɹʌs]	sneeden's 9	[snidənz]
glurk 44	[glʌk]	thing-a-ma-jigger 48	[θɪŋɑmadʒɪgəɹ]
Mr. Brown Can Moo, Can You?			
dop 8	[dʌp]		
Oh, Say Can You Say?			
pinner 5	[pɪnəɹ]	blinn 5	[blɪn]
shin-pin 5	[ʃɪnpɪn]	grox 10	[gɹɔks]
groxes10	[gɹɔksəz]	fuddnuddler 14	[fʌdnʌdləɹ]
bipper 14	[bɪpəɹ]	jipper 14	[dʒɪpəɹ]
hud 14	[hʌd]	fud 14	[fʌd]
lud 14	[lʌd]	dinwoodie 14	[dɪnwʊdi]
schnacks 14	[ʃnɑks]	glotz 25	[glɔts]
klotz 25	[klɔts]	skrope 30	[skɹoʊp]
blispers 36	[blɪspəɹz]	bliskers 36	[blɪskəɹz]

NEOLOGISM	IPA	NEOLOGISM	IPA
Oh, the Places You'll Go!			
hakken-kraks 36	[hækɛnkɹæks]	bauxbaum 44	[bɔksbaʊm]
bixby 44	[bɪksbi]		
Oh, the Thinks You Can Think!			
schlopp 7	[ʃlɔp]	krauss 11	[kɹaʊs]
bloogs 12	[blugz]	na-nupp 14	[nɑnʌp]
da-dake 16	[dɔdeɪk]	zong 21	[zɔŋ]
jibboo 25	[dʒɪboʊ]	vipper 32	[vɪpəɹ]
vipp 32	[vɪp]	beft 44	[bɛft]
The Pop-Up Mice of Mr. Brice			
bimmy 2	[bɪmi]	quackenbush 3	[kwækənbʊʃ]
brice-mice 16	[bɹismis]		
On Beyond Zebra!			
yuzz-a-ma-tuzz 6	[jʌzɑmɑtʌz]	wumbus 9	[wʌmbʌs]
umbus 10	[ʌmbʌs]	fuddle-dee-duddle 14	[fʌɾ̩didʌɾ̩]
fuddle-dee-duddle's 14	[fʌɾ̩didʌl̩z]	muddle-dee-puddles 14	[mʌɾ̩dipʌɾ̩z]
glikker 16	[glɪkəɹ]	nutches 18	[nʌtʃəz]
mos-keedle 20	[mɔskidl̩]	sneedle 18	[snidl̩]
nazzim 26	[næzɪm]	bazzim 26	[bæzɪm]
floob-boober-bab-boober-bubs 28	[flubbubəɹbabbubəɹbʌbz]		
zatz-it 31	[zætzɪt]	jogg-oons 33	[dʒɔgunz]
flunnel 35	[flʌnəl]	o'grunth 35	[oʊgɹʌnθ]
fun-th 35	[fʌnθ]	tun-th 35	[tʌnθ]
one-th 35	[wʌnθ]	yekko 38	[jɛkoʊ]
yekkos 38	[jɛkoʊz]	gargel-orum 42	[gɑɹgəlɔɹʌm]
yupster 42	[jʌpstəɹ]		
One Fish, Two Fish, Red Fish, Blue Fish			
wump 18	[wʌmp]	gump 19	[gʌmp]
zans 37	[zɑnz]	gox 38	[gɔks]
ying 40	[jɪŋ]	yink 42	[jɪŋk]
yop 44	[jɔp]	ish 56	[ɪʃ]
gack 58	[gæk]	zeep 62	[zip]
Scrambled Eggs Super!			
sala-ma-goox 4	[sɑlɑmɑguks]		
sala-ma-goox's 5	[sɑlɑmɑguksəz]		
tizzle-topped 7	[tɪzl̩tɔpt]		
super-dee-dooper-dee-booper 12	[supəɹdidupəɹdibupəɹ]		
kweet 16	[kwit]	beezlenut 16	[bizl̩nʌt]
kwigger 21	[kwɪgəɹ]	kwong 23	[kwɔŋ]
fa-zoal 24	[fɑzoʊl]	kata-ma-side 24	[kɑtɑmɑsaɪd]
grice 24	[gɹaɪs]	squitsch 24	[skwɪtʃ]
zummzian 29	[zumzɪɑn]	zuks 29	[zuks]
zumms 29	[zumz]	strookoo 30	[stɹuku]
ham-ikka-schnim- ikka-schnam-ikka-schnopp 34	[hɑmɪkɑʃnɪmɪkɑʃnɑmɪkɑʃnɔp]		
grickily 38	[gɹɪkɪli]	gractus 38	[gɹɑktʌs]
ziffs 40	[zɪfz]	zuffs 40	[zʌfs]
sneth 42	[snɛθ]	dawf 44	[dɔf]
zinzibar-zanzibar 44	[zɪnzɪbɑɹzɑnzɪbɑɹ]	jill-ikka-jast 44	[dʒɪlɪkɑdʒæst]

NEOLOGISM	IPA	NEOLOGISM	IPA
The Shape of Me and Other Stuff			
blogg 23	[blɔg]		
The Sneetches and Other Stories			
sneetches 1	[snitʃəz]	thars 1	[θaɪz]
chappie 7	[tʃæpi]	sneetch 8	[snitʃ]
bonked 9	[bɔŋkt]	berked 27	[bəɪkt]
prax 27	[pɪæks]	zax 27	[zæks]
bodkin 41	[bɔdkɪn]	hoos-foos 41	[huzfuz]
snimm 41	[snɪm]	blinkey 41	[blɪŋki]
ziggy 41	[zɪgi]	sneepy 41	[snipi]
zutt 41	[zut]	boliver 41	[bɔlɪvəɪ]
roover 50	[ɹuvəɪ]	brickel 52	[bɪɪkl̩]
brickels 52	[bɪɪkl̩z]		
There's a Wocket in My Pocket			
wocket (cvr)	[wɔkət]	findow (cvr)	[fɪndoʊ]
gase (cvr)	[geɪs]	wasket 1	[wæskət]
nureau 2	[nuɹoʊ]	woset 3	[wɔsət]
jertain 4	[dʒəɹtən]	zlock 5	[zlɔk]
zelf 6	[zɛlf]	nink 8	[nɪŋk]
zamp 9	[zæmp]	yot 10	[jɔt]
yottle 11	[jɔɾl̩]	zable 12	[zeɪbl̩]
ghair 12	[geɪɹ]	bofa 13	[boʊfɑ]
nupboards 14	[nʌpbɔɪdz]	nooth 15	[nuθ]
grush 15	[gɹʌʃ]	vug 16	[vʊg]
quimney 18	[kwɪmni]	zall 19	[zɑl]
yeps 6	[jɛps]	tellar 22	[tɛləɹ]
nellar 22	[nɛləɹ]	gellar 22	[gɛləɹ]
dellar 22	[dɛləɹ]	bellar 22	[bɛləɹ]
wellar 22	[wɛləɹ]	zellar 22	[zɛləɹ]
geeling 24	[gilɪŋ]	zower 25	[zaʊəɹ]
ziller 26	[zɪləɹ]		
Thidwick:The Big-Hearted Moose			
winna-bango 1	[wɪnəbɑŋgoʊ]	thidwick 2	[θidwɪk]
bingle 2	[bɪŋgl̩]	zinn-a-zu 6	[zɪnɑzu]
thidwick's 8	[θidwɪks]		
The Tooth Book			
queek 18	[kwik]		
Yertle the Turtle			
sala-ma-sond 1	[sɑlɑməsʌnd]	yertle 1	[jəɹtl̩]
lolla-lee-lou 31	[lɔlɔlilu]	dake 32	[deɪk]
zang 38	[zɑŋ]	whuffed 59	[wʌft]
snaff 59	[snæf]		

NEOLOGISM	IPA	NEOLOGISM	IPA
You're Only Old Once!			
fotta-fa-zee 3	[fɔtafɑzi]	tutt-a-tutt 3	[tʌtʌtʌt]
optoglymics 5	[ɔptouglɪmɪks]	dermoglymics 5	[dəɹmouglɪmɪks]
winick 8	[wɪnɪk]	norval 14	[nouɹv̩l]
nooronetics 14	[nouɹɔnɛtɪks]	whelden 24	[wɛldən]
stethed 27	[stɛθt]	smoot 27	[smut]
wuff-whiffer 32	[wʌwɪfəɹ]	spreckles 35	[spɹɛkl̩z]
blinn 35	[blɪn]	ballew 35	[bælu]
timpkins 35	[tɪmkɪnz]		

APPENDIX D

Fneen

(Possibilities in other human language lexicons)

NEOLOGISM	IPA
Dr. Seuss's Sleep Book	
vleck 1	[vlɛk]
Horton Hears a Who!	
vlad 24	[vlæd]
vlad-i-koff 24	[vlædɪkɔf]
"The Idioms of Iceland at a Glance" from ***Dr. Seuss & Mr. Geisel***	
ewth 69[1]	[ɛwθ]
The Lorax	
Thneed 18[2]	[θnid]
Thneeds 30	[θnidz]
There's a Wocket in My Pocket!	
zlock 5	[zlɔk]

English Syllable Violations:

(1) No [+voice] fricative is allowed syllable initially in CC. e.g. [vl], [zl].

(2) No [θn] is allowed in syllable initial CC.

[1]Gloss: sweatshop snowball factory.

[2]Gloss: a "fine-something-that all-people-need": a shirt, sock, glove, hat, carpet, pillow, sheets, curtain, cover for bicycle seats.

APPENDIX E

Fteen

(Violations to Universal Language Constraints)

NEOLOGISM	IPA	VIOLATION
"The Idioms of Iceland at a Glance" from Dr. Seuss & Mr. Geisel		
glnbokk 69[1]	[**gln**bɔk]	SSC by reversal
mnpf 69[2]	[**mnpf**]	Universal Language Syllable Structure
		SSC by plateau
If I Ran the Zoo		
tobsk 42[3]	[tɔ**bsk**]	SSC by reversal
nobsk 42[4]	[nɔ**bsk**]	SSC by reversal
obsk 42[5]	[ɔ**bsk**]	SSC by reversal
thing-a-ma-bobsk 42[6]	[bɔ**bsk**]	SSC by reversal
corn-on-the cobsk 42[7][	[kɔ**bsk**]	SSC by reversal
mobsk 42[8]	[mɔ**bsk**]	SSC by reversal
jobsk 42[9]	[dʒɔ**bsk**]	SSC by reversal
On Beyond Zebra!		
swampf 13[10]	[swʌ**mpf**]	SSC by reversal
humpf 13[11]	[hʌ**mpf**]	SSC by reversal
swumpf 13[12]	[swʌ**mpf**]	SSC by reversal
humpf-humpf-a-dumpfer 13[13]		SSC by reversal
	[hʌ**mpf**hʌ**mpf**ɑdʌ**mpf**əɹ]	

[1]Gloss: old-fashioned tusking bee.

[2]Gloss: one who went visiting on St. Swithin's Day.

[3]Gloss: name of a mountain range.

[4]Gloss: name of a river.

[5]Gloss: an animal-bird.

[6]Gloss: akin to species type.

[7]Gloss: a food.

[8]Gloss: description of many people.

[9]Gloss: a job.

[10]Gloss: type of swamp.

[11]Gloss: an orthographic letter.

[12]Gloss: another type of swamp.

[13]Gloss: a word spelled with the letter "humpf".

APPENDIX F

Phonotactic Rules

ENGLISH	IPA	NEOLOGISM	IPA
Paragogue			
Bartholomew and the Oobleck			
fist	[fɪst]	fista 8	[fɪstɑ]
wist	[wɪst]	wista 8	[wɪstɑ]
mist	[mɪst]	mista-cuff 8	[mɪstɑ]
Epenthesis			
The Butter Battle Book			
prickly	[prɪkli]	prickely 9	[pɹɪkəli]
The Cat in the Hat Songbook			
ought	[ɔt]	ort 25	[ɔɹt]
thieves	[θivz]	thievers 52	[θivəɹz]
Happy Birthday to You!			
association	[əsosieɪʃn]	asso-see-eye-ation 3	[əsosiaɪeɪʃn]
palace	[pæləs]	pal-alace 35	[pælæləs]
I Can Draw it Myself by Me, Myself			
squigglies	[skwɪgliz]	squiggilies 6	[skwɪgɪliz]
If I Ran the Circus			
bumbling	[bʌmblɪŋ]	bummbeling 28	[bʌmbəlɪŋ]
Deletion			
The Butter Battle Book			
figure	[figuɹ]	figger 13	[figɹ]
snatch them	[snætʃ ðɛm]	snatchem 17	[snætʃɛm]
I Can Lick 30 Tigers Today! And Other Stories			
democratic	[dɛmokɹætɪk]	democatic 34	[dɛmokætɪk]
You're Only Old Once!			
finicky-finicky	[fɪnɪki fɪnɪki]	finicky-finick 8	[fɪnɪki fɪnɪk]

APPENDIX G

Inflectional Morphology

NEOLOGISM

The Butter Battle Book
blue-gooer 31
boomeroo 34
top-est 35
Did I Ever Tell You How Lucky You Are?
duckie 5
boober 6
glad-ish 41
Dr. Seuss's ABC
quacker-oo 40
Dr. Seuss's Sleep Book
snortiest 32
Happy Birthday to You!
cloppers 17, all-er 30, snookers 43, you-er 43
Hooray for Diffendoofer Day!
different-er 42
Horton Hears a Who!
whooped 49
oom-pahs 49
I Can Draw it Myself by Me, Myself
toeses 9
mcGrew 10
I Can Lick 30 Tigers Today! And Other Stories
un-thinks 40, un-thunk 46
thunked 44
If I Ran the Circus
bloops 31
eyeses 40
mcgurk 1, mcorgan 28, mcgurkus 28,
If I Ran the Zoo
un-usual 4
mcgrew 1, mcgrewski 44, mcgrewses 50
Maybe You Should Fly a Jet! Maybe You Should be a Vet!
tromboner 14, hiver 25, vester 36
Oh, Say Can You Say?
finney's 2, dinn's 4
quacker 16
flapped-jack 26
Oh, the Places You'll Go!
un-slumping 19
weirdish 23
breaknecking 23
winning-est 31
On Beyond Zebra!
o'dell 1, o'grunth 35
popping-corn 26
Scrambled Eggs Super!
hooper 1
The Sneetches and Other Stories
mcmonkey 7, mcbean 7, mccave 37, mccave's 41
un-budged 35
o'gravel 41
Thidwick: The Big-Hearted Moose
freezy 19

APPENDIX H

Derivational Morphology

ENGLISH	NEOLOGISM
The Butter Battle Book	
N → V	
slingshot (*n.*)	slingshot**ted** (*v.*) 11
A → V	
best (*adj.*)	best**ed** (*v.*) 24
N → A	
bits (*n.*)	bits**y** (*adj.*) 34
secret (*n.*)	secret-**est** (*adj.*) 35
The Cat in the Hat Songbook	
V → N	
plink (*n.*)	plink**er** (*v.*) 16
The Cat's Quizzer: Are You Smarter thant the Cat in the Hat?	
V → A	
zig (*v.*)	ziggy (*adj.*) 1
Did I Ever Tell You How Lucky You Are?	
A → Adv	
much (*adj.*)	much**ly** (*adv.*) 5
N → A	
punker (*n.*)	punker**ish** (*adj.*) 47
guck (*n.*)	gucky (*adj.*) 43
Dr. Seuss's Sleep Book	
V → N	
draw (*v.*)	draw-**er** (*n.*) 10
snore (*v.*)	snor**er** (*n.*) 32
N → V	
hoop (*n.*)	hoop**ing** (*v.*) 23
Fox in Socks	
N → A	
glue (*n.*)	glue**y** (*adj.*) 31
freeze (*n.*)	freez**y** (*adj.*) 47
Happy Birthday to You!	
N → A	
east (*n.*)	east-**est** (*adj.*) 26
west (*n.*)	west-**est** (*adj.*) 26
best (*n.*)	best-**est** (*adj.*) 26
all (*n.*)	all-**est** (*adj.*) 26
Horton Hears a Who!	
N → V	
humpf (*n.*)	humpf**ed** (*v.*) 10
N → A	
fall (*n.*)	fall-**ish** (*adj.*) 60

ENGLISH	NEOLOGISM
How the Grinch Stole Christmas!	
N → A	
grinch (*n.*)	grinch**y** (*adj.*) 4
N → A → Adv	
grinch (*n.*)	grinch-**ish-ly** *(adj. - adv.)* 4
Hunches in Bunches	
V → N	
wont (won't) (*v.*)	wont**er** (*n.*) 14
dont (don't) (*v.*)	dont**er** (*n.*) 14
N → A	
hunch (*n.*)	hunch**y** (*adj.*) 29
I Can Lick 30 Tigers Today! And Other Stories	
V → N	
un-think (*v.*)	un-think**er** (*n.*) 40
snort (*v.*)	snort**y** (*n.*) 42
If I Ran the Circus	
V → N	
should (*v.*)	should**sters** (*n.*) 27
bloop (*v.*)	bloop**s** (*n.*) 31
jeer (*v.*)	jeer**s** (*n.*) 50
lurch (*v.*)	lurch (*n.*) 31
N → V	
mop-noodle (*n.*)	mop-nood**led** (*v.*) 10
trapeeze (*n.*)	trapeez**ing** (*v.*) 39
ruckus (*n.*)	ruckus-**ing** (*v.*) 53
A → NP	
atrocious *(adj.)*	atrocious (*n.*) in "a spotted atrocious" 36
V → Adv	
slipping (*v.*)	slipping**ly** (*adv.*) 34
A → Adv	
fast (*adj.*)	fast**ly** (*adv.*) 45
The Lorax	
Adv → N	
once (*adv.*)	once-**ler** (*n.*) 3
A → N	
crummy (*adj.*)	crummies (*n.*) 35
A → V	
big (*adj.*)	biggered (*v.*) 39
	biggering (v.) 39
Maybe You Should Fly a Jet! Maybe You should be a Vet!	
V → N	
perk (v.)	perk**er** (*n.*) 18
McElligot's Pool	
V → N	
frisk (*v.*)	frisk**ers** (*n.*) 18

ENGLISH	NEOLOGISM
Scrambled Eggs Super!	
V → N	
twiddle (*v.*)	twiddler (*n.*) 15
N → V	
mop-noodle (*n.*)	mop-noodled (*v.*) 10
Oh, Say Can You Say?	
N → V	
quack-quack (*v.*)	quack-quacks (*n.*) 16
V → N	quacker (*n.*)
N → A	
dint (*n.*)	dinty (*adj.*) 14
N → A Lexical Meaning change	
worsted (*n.*)	worsted (*adj.*) 22
A → Proper Noun	
finny (*adj.*)	Finney's (*n.*) 2
The Sneetches and Other Stories	
A → N	
snide (*a.*)	peck of snide (*n.*) 54
You're Only Old Once!	
N → V	
questionnaire (*n.*)	questionnairing (*v.*) 8
A → Adv	
next (*adj.*)	nextly (*adv.*) 35

Compounds

The Butter Battle Book
Adjectival Compounds
snick-berry, triple-sling, broken-off, jigger-rock, whizz-zinger, dried-fried, gun-toting, eight-nozzled
elephant-toted, butter-up, butter-down, right-side-up, big-boy
NP Compounds
VanItch, boom-blitz, boom-bah, diddle-dee-dill, moo-lacka-moo, zook-watching
The Cat in The Hat Songbook
Adjectival Compounds
goose-moose
NP Compounds
mushmush, futzenfell
The* Cat's *Quizzer
NP Compounds
flash-darks, what-is-it
Daisy-Head Mayzie
Adjectival Compounds
daisy-head
Did I Ever Tell You How Lucky You Are?
Adv. Compounds
much-much, more-more-more
NP Compounds
bunglebung, crumple-horn, wamel-faddle, t-crosser, I-dotter
bee-watcher, bee-watcher-watcher, watch-watcher-watcher, watch-watcher-watchering-watch
Dr. Seuss's ABC
NP Compounds
duck-dog, wiggins
Dr. Seuss's Sleepbook
NP Compounds
every-which-where, stilt-walker, stilt-walker's, who's-asleep-score, sleep-talkers, snore-a-snort bumble-tub, bumble-tubs, audio-telly-o-tally-o-count, hoop-soup-snoop
Verb Compounds
night-brushing, tooth-brushing
Fox in Socks
NP Compounds
goo-goose
Happy Birthday to You!
NP Compounds
honk-honker, sweeping-up-afters, day-of-the-best-of-the-best, night-of-all-nights-of-all-nights
Verb Compounds
honk-honk, flap-flap, munch-er-oo, mustard-off
Adjective Compounds
warm-water, time-telling, bird-back
Hop on Pop
NP Compounds
Seehemewe, hethreetreebee
Verb Compounds
Tophopstop, patpuppop
Horton Hatches the Egg
NP Compounds
elephant-bird
Horton Hears a Who!
NP Compounds
speck-voice, who-ville
Adjective Compounds
black-bottomed, floor-to-floor
How the Grinch Stole Christmas!
NP Compounds
who-ville, who-pudding, who-roast-beast, who-christmas-sing, who-hash, grinch-feet
Adjective Compounds
hand-in-hand
Verb Compounds
a-snooze, a-bed
Hunches in Bunches
Adjective Compounds
murky-mooshy

I'm Not Going to Get Up Today!
Adjective Compounds
woozy-snoozy
Verb Compounds
woozy-snoozing
I Can Draw it Myself by Me, Myself
NP Compounds
top-knot, diddle-dee-dots, filla-ma-dills, doodle-dee-dots
I Can Lick 30 Tigers Today! And Other Stories
NP Compounds
thinker-upper, frazzle-spade, chuck-a-luck
Verb Compounds
thunk-thunk-thunking
I Had Trouble in Getting to Solla Sollew
Adjective Compounds
green-headed, one-wheeler, marshmallow-stuffed, bird-filled-up, key-slapping
NP Compounds
woo-wall
I Wish I Had Duck Feet
Adjective Compounds
long-nose
NP Compounds
which-what-who
If I Ran the Circus
Adjective Compounds
horn-tooting, drum-tummied, wink-hooded, fluff-muffled
NP Compounds
drum-tummy'swink-hood, tent-of-all-tents, parade-of-parades, roust-about-joust
If I Ran the Zoo
Adjective Compounds
four-footed, gol-darndest, out-of-the-way, squirrel-skin, scraggle-foot, south-east, north-eastern, redski, zooski
NP Compounds
sort-of-a-hen, zoo-keeper's, elephant-cat, what-do-you-know, bad-animal-catching-machine,
cooker-mobile, headski, zooski
Verb Compounds
keen-shooter, mean-shooter, bean-shooter
The King's Stilts
NP Compounds
chief-in-charge-of-fish stilt-walking
Adjective Compounds
black-spotted
The Lorax
NP Compounds
fine-something-that-all-people-need, radio-phone, super-axe-hacker, yap-yap
Adjective Compounds
old-nuisance
Verb Compounds
smogged-up
Marvin K. Mooney, Will You Please Go Now!
NP Compounds
bumble-boat
McElligott's Pool
Adjective Compounds
high-jumping, fast-moving, over-arm
NP Compounds
deep-divers
Oh, Say Can You Say?
NP Compounds
quacker-backer soup-off-hoops
Adjective Compounds
fred-fed, blue-footed, true-footed, trick-fingered, slick-fingered, six-fingered, six-stringed,
souped-up, bird-flight, night-sight

Oh, The Places You'll Go!
Adjective Compounds
not-so-good
NP Compounds
bang-ups, mind-maker-upper
Prep Compounds
right-and-three-quarters
Verb Compounds
flip-flapping
Oh, the Thinks You Can Think!
NP Compounds
rink-rinker-fink
On Beyond Zebra!
NP Compounds
bird-of-a-bird-of-a-bird-of, sept-umber, step-sister, itch-a-pods, bunglefield, nipswich
Adjective Compounds
hum-dinger, three-seater, nose-patting
Prep Compounds
where-so-ever
Scrambled Eggs Super!
Adjective Compounds
ruffle-necked, beagle-beaked, bald-headed, shade-roosting, long-legger, three-eyelashed, south-west-facing, moth-watching, fleet-footed
NP Compounds
lass-a-lack's, flannel-wing, sea-leopard's
The Sneetches and Other Stories
Adjective Compounds
star-belly, plain-belly, fix-it-up, north-going, south-going
Verb Compounds
star-off
NP Compounds
star-bellies, hot-shot
Thidwick: The Big-Hearted Moose
NP Compounds
moose-moss, moose-hair
Adjective Compounds
big-hearted, hard-hearted
Verb Compounds
bang-binging, bang-bouncing
Yertle the Turtle and Other Stories
Adjective Compounds
far-away, nine-turtle, droopy-droop
NP Compounds
girl-bird, pill-berry
You're Only Old Once!
Adjective Compounds
potassium-free, diet-devising, loganberry-colored, orange-tinted
NP Compounds
quiz-docs, sniff-scan

APPENDIX I

Minimal Pairs

(Neologisms underscored)

NEOLOGISM	IPA	ENGLISH MINIMAL PAIR	
Bartholomew and the Oobleck			
fista 8	[fɪstɑ]		
wista 8	[wɪstɑ]		
mista-cuff 8	[mɪstɑ]		
The Cat in the Hat Songbook			
bumplings 5	[bʌmplɪŋz]	dumplings	[dʌmplɪŋz]
waggy 9	[wægi]	shaggy	[ʃægi]
		baggy	[bægi]
Did I Ever Tell You How Lucky You Are?			
wamel 23	[wæməl]	camel	[kæməl]
faddle 23	[fædl̩]	saddle	[sædl̩]
Dr. Seuss's Sleep Book			
tocker 29	[tɔkəɹ]		
ticker 29	[tɪkəɹ]		
Fox in Socks			
tocks 14	[tɔks]	ticks	[tɪks]
duddled 59	[dudl̩d]	fuddle	[fudl̩]
wuddled 59	[wudl̩d]	muddled	[mudl̩d]
Happy Birthday to You!			
cawnt 9	[kɔnt]		
shawnt 9	[ʃɔnt]		
derring's 41	[dɛɹɪŋz]	herrings	[hɛɹɪŋz]
I Can Read with My Eyes Shut!			
hut-zut 31	[hʌt]-[zʌt]	shut	[ʃʌt]
I Can Draw it Myself by Me, Myself			
hamika-snamika-bamika-bunt 18			
	[hæmɪkɑ]		
	[bæmɪkɑ]		
If I Ran the Circus			
fling-flang 28	[flɪŋ]		
	[flæŋ]		
huffle 31	[hʌfl̩]	shuffle	[ʃʌfl̩]
Marvin K. Mooney, Will You Please Leave			
zike-bike 8	[zaik]	bike	[baik]

NEOLOGISM	IPA	ENGLISH MINIMAL PAIR	
Oh, Say Can You Say?			
shin-pin 5	[ʃin]	dinn	[dɪn]
	[pin]		
bipper 14	[bɪpəɹ]		
jipper 14	[dʒɪpəɹ]		
hud 14	[hʌd]		
fud 14	[fʌd]		
lud 14	[lʌd]	dud	[dʌd]
Oh, the Thinks You Can Think			
beft 35	[bɛft]	left	[lɛft]
vipp 32	[vɪp]	ship	[ʃɪp]
The Pop Up Mice of Mr. Brice			
bimmy 4	[bɪmi]	jimmy	[dʒɪmi]
On Beyond Zebra			
fuddle-dee-duddle 14	[fʌdl̩]		
	[dʌdl̩]		
muddle-dee-puddles 14	[mʌdl̩]	puddle	[pʌdl̩z]
swumpf 13	[swʌmpf]		
swampf 13	[swɑmpf]		
nazzim 26	[næzɪm]		
bazzim 26	[bæzɪm]		
fun-th 35	[fʌnθ]		
tun-th 35	[tʌnθ]		
one-th 35	[wʌnθ]		
One Fish, Two Fish, Red Fish, Blue Fish			
wump 18	[wʌmp]		
gump 19	[gʌmp]		
Scrambled Eggs Super!			
ziffs 40	[zɪfs]		
zuffs 40	[zʌfs]		
The Sneetches and Other Stories			
prax 27	[pɹæks]	tracks	tɹæks]
hoos-foos 41	[huz]		
	[fuz]		
There's a Wocket in My Pocket!			
tellar 22	[tɛləɹ]	cellar	[sɛləɹ]
nellar 22	[nɛləɹ]		
gellar 22	[gɛləɹ]		
dellar 22	[dɛləɹ]		
bellar 22	[bɛləɹ]		
wellar 22	[wɛləɹ]		
zellar 22	[zɛləɹ]		

APPENDIX J

Miscellaneous Word Play

(Advanced vocabulary used as neologisms: lexical meaning change)

NEOLOGISM

The Butter Battle Book
pell-mell 30

Daisy-Head Maysie
ting 45

Did I Ever Tell You How Lucky You Are?
Jivvanese 30

Dr. Seuss's ABC
nixie 54

Dr. Seuss's Sleep Book
keck 1

Happy Birthday to You!
funicular 14

Horton Hears a Who!
hullabaloo 50
shirker 54
twerp 54

How the Grinch Stole Christmas!
giddap 16

If I Ran the Circus
dingus 53

If I Ran the Zoo
mazurka 34

Maybe You Should Fly a Jet! Maybe You Should be a Vet!
lepidopterist 29

Oh, Say Can You Say?
hooey 1

On Beyond Zebra!
quandry 22

Scrambled Eggs Super!
frizzled9
pelf 26

Thidwick: The Big-Hearted Moose
sluice 29

Yertle the Turtle and Other Stories
smellers 57

APPENDIX K

Neologisms
(Complete listing)

The 500 Hats of Bartholomew Cubbins **20 neologisms**
cubbins 1, didd 1, derwin 2, flupp 17, alaric 19, snipps 20, screebees 22, nadd 23, g-r-r-zibb 29, g-r-r-zapp 29, g-r-r-zopp 29, malber 31, balber 31, tidder 31, tudd 31, winkibus 31, tinkibus 31, fotichee 31, klay 31, gleap 31.

And to Think that I Saw it on Mulberry Street **0 neologisms**

Bartholomew and the Oobleck **10 neologisms**
didd 1, cubbins 1, derwin 5, fista 8, wista 8, mista-cuff 8, oobleck 10, neeka-tave 11, glugg 24, gloing 25.

Because a Little Bug Went Ka-choo **1 neologism**
ka-choo 2.

The Butter Battle Book **44 neologisms**
yooks 4, zooks 4, zook-watching 6, prickely 9, snick-berry 9, vanitch 11, slingshotted 11, yookeroo 12, broken-off 12, figger 13, triple-sling 13, jigger-rock 17, snatchem 17, gupp 17, whizz-zinger 19, kick-a-poo 20, poo-a-doo 20, gun-toting 20, dried-fried 20, worsted 22, eight-nozzled 22, elephant-toted 22, boom-blitz 22, witz 22, bested 24, boom-bah 24, diddle-dee-dill 24, butter-up 24, right-side-up 25, butter-down 27, blue-gooer 31, miz 33, yookie-ann 33, moo-lacka-moo 34, sala-ma-goo 34, bitsy 34, big-boy 34, boomeroo 34, top-est 35, secret-est 35, yookery 37, lopulous 40, bopulous 40, klupp-klupp 41, klupped 41.

The Cat in the Hat **0 neologisms**

The Cat in the Hat Comes Back! **1 neologism**
voom 57.

The Cat in the Hat Dictionary **0 neologisms**

The Cat in the Hat Songbook **27 neologisms**
wuzzled 4, poobers 4, goose-moose 4, goolash 4, mushmush 5, wham 5, stroodles 5, wush 5, bumplings 5, flum 6, waggy 9, plinker 16, zum 18, zummer 18, boop 19, booper 19, 'ort' 25, hoo-to 33, foo-to 33, boo-to 33, dobble 35, bicklebaum 39, spingel 42, spungel 42, sporn 42, futzenfell 43, thievers 52, woosh 53.

The Cat's Quizzer: Are You Smarter than the Cat in the Hat? **5 neologisms**
ziggy 1, zossfozzel 1, zizzy 1, flash-darks 21, what-is-it 25.

Come Over to My House **0 neologisms**

Daisy-Head Mayzie **3 neologisms**
sneetcher 5, daisy-head 7, mayzie 7.

Did I Ever Tell You How Lucky You Are? **56 neologisms**
drize 3, duckie 5, muchly 5, much-much 5, bunglebung 6, boober 6, bumm 6, ga-zayt 8, zayt 8, ga-zair 10, throm-dim-bu-lator 13, gick 13, goor 13, skrux 13, snux 13, snoor 13, piffulous 15, dooklas 15, grooz 17, bix 18, borfin 18, shlump 18, un-shlump 18, shlumps 18, schlottz 20, crumple-horn 20, wamel 23, faddle 23, wamel-faddle 23, t-crosser 24, i-dotter 24, hawtch-hawtch 26, bee-watcher 26, mawtch 26, hawtch-hawtcher 27, bee-watcher-watcher 27, hawtchers 29, watch-watcher-watcher 29, watch-watcher-watchering-watch 29, hawtch-watcher 29, de breeze 30, poogle-horn 33, poo-boken 33, poogles 33, haddow 35, gizz 35, ba-zoo 36, muchly 36, more-more-more 36, glad-ish 41, falkenberg's 41, gucky 43, ronk 43, krock 44, punkerish 47.

Dr. Seuss's ABC **14 neologisms**
doo 12, duck-dog 12, fiffer-feffer-feff 16, kerchoo 27, lopp 28, quincy 40, quacker-oo 40, tuttle-tuttle 46, ubb 48, vinn 50, wiggins 53, knox 54, yorgenson 57, zizzer-zazzer-zuzz 63.

Dr. Seuss's Sleep Book **41 neologisms**
van vleck 1, every-which-where 5, biffer-baum 6, night-brushing 8, tooth-brushing 8, herk-heimer 8, krupp 10, draw-er 10, stilt-walkers' 12, stilt-walker 12, mercedd 14, hinkle-horn 14, frink 17, who's-asleep-score 17, audio-telly-o-tally-o-count 18, biggel-ball 18, plup 18, sleep-talkers 20, redd-zoff 20, a-la-hoop 22, hooping 23, hoop-soup-snoop 23, mupp 26, krox 28, tocker 29, ticker 29, snortiest 32, snorer 32, mcphail 32, snore-a-snort band 32, foona-lagoona 34, baboona 34, jedd 37, dofft 38, offt 38, bumble-tub 42, bumble-tubs 42, va-vode 44, zizzer-zoof 44, zizzer-zoofing 45, foodle 48.

The Eye Book **0 neologisms**

The Foot Book **0 neologisms**

"The Idioms of Iceland at a Glance" from ***Dr. Seuss & Mr. Geisel*** **4 neologisms**
glnbokk 69, mnpf 69, ewth 69, hoooah 69

Fox in Socks **10 neologisms**
knox 1, tock 14, gluey 31, goo-goose 32, bim 36, blibber 44, freezy 47, tweetle-beetle 49, duddled 59, wuddled 59.

Great Day for Up! **1 neologism**
dill-ma-dilts 15.

Green Eggs and Ham **0 neologisms**

Happy Birthday to You! **43 neologisms**
katroo 1, honk-honker 1, zorn 1, honk-honk 2, flap-flap 2, asso-see-eye-ation 3, hi-sign-and-shake 6, cawnt 9, shawnt 9, munch-er-oo 9, toppest 13, who-bubs 17, cloppers 17, snop 17, snoppers 17, nop 17, hippo-heimers 18, mustard-off 23, warm-water 23, disn't 25, east-est 26, west-est 26, best-est 26, all-er 30, all-est 30, time-telling 32, getz 32, gitz 32, gits 32, day-of-the-best-of-the-best 35, night-of-all-nights-of-all-nights 35, klopfers 35, pal-alace 35, sweeping-up-afterwards-brooms 37, zummers 38, zum 38, zumming 38, derring's 41, snookers 43, dutter 43, you-er 43, bird-back 46, hiffer-back 46.

Hooray for Diffendoofer Day! **8 neologisms**
different-er 42, zinzendorf 44, zoofendorf 44, diffendoof 49, ziffendoof 49, vacu-bike 50, finkel 52, winkel 52.

Hop on Pop **4 neologisms**
seehemewe 64, patpuppop 64, hethreetreebee 64, tophopstop 64.

Horton Hatches the Egg **5 neologisms**
mayzie 1, horton 2, toodle-oo 4, oooh 34, elephant-bird 51.

Horton Hears a Who! **18 neologisms**
nool 1, horton 1, humpfed 10, speck-voice 18, who-ville 21, black-bottomed 24, vlad 24, vlad-i-koff 24, beezle-nut 38, whooped 49, oom-pahs 49, boom-pahs 49, bipping 52, floor-to-floor 52, jo-jo 54, yopp 57, fall-ish 60.

How the Grinch Stole Christmas! **15 neologisms**
who-ville 1, grinch 3, grinchy 4, who-pudding 8, who-roast-beast 8, hand-in-hand 10, who-christmas-sing 11, a-snooze 17, chimbley 23, who-hash 25, a-bed 37, crumpit 38, grinch-ish-ly 38, grinch-feet 44.

Hunches in Bunches **8 neologisms**
ga-fluppted 14, murky-mooshy 14, wonter 14, donter 14, gee-hossa-flat 19, schlupp 22, hunchy 29, barg-ued 37.

I'm Not Going to Get Up Today! **7 neologisms**
brrnnng (2), woozy-snoozy 13, zizz-zizz 13, zazz 13, zuzz 13, woozy-snoozing 21, doo 23.

I Can Draw it Myself by Me, Myself **18 neologisms**
sneggs 2, top-knot 2, quirkles 4, diddle-dee-dots 4, zidd 5, zidds 5, dee 6, doo 6, squiggilies 6, hoo-fish 7, gish 7, stine 8, toeses 9, mcgrew 10, chantz 12, filla-ma-dills 16, yill-iga-yakk 17, hamika-snamika-bamika-bunt 18.

I Can Lick 30 Tigers Today! and Other Stories **36 neologisms**
<u>*King Looie Katz*</u>
looie 17, katz 17, katzen-stein 18, fooie 20, kooie 23, chooie 25, hooie 26, blooie 26, prooie 26, zooie 28, katzen-bein 28, blooie's 33, hooie's 33, chooie's 33, kooie's 33, looie's 33, demo-catic 34.

<u>*The Glunk that Got Thunk*</u>
glunk 37, thinker-upper 38, un-thinker 40, un-thinks 40, snorty 42, thunk-thunk-thunking 42, blunk 44, thunked 44, klunker-klunk 44, un-thunk 46, tele-foam 47, texa-kota-cutt 48, glunker 49, frazzle-spade 49, spuggle 49, chuck-a-luck 50, glunking 50, schnutz-berry 52, schnutz 52.

I Can Read with My Eyes Shut! **3 neologisms**
foo-foo 21, snoo 21, hut-zut 31.

I Can Write, a Book by Me, Myself **0 neologisms**

I Had Trouble in Getting to Solla Sollew **25 neologisms**
vung 1, green-headed 6, quilligan 6, skritz 10, skrink 10, one-wheeler 12, wubble 12, solla 12, sollew 12, wah-hoo 12, wubbed 14, wubble-some 14, gleeks 20, jicker 25, flepped 26, marshmallow-stuffed 28, flubbulous 30, poozer 35, pompelmoose 35, poozers 39, bird-filled-up 45, sfindex 45, key-slapping 53, slippard 53, boola 54, woo-wall 54.

I Wish that I Had Duck Feet **3 neologisms**
kerchoo 40, long-nose 44, which-what-who 52.

If I Ran the Circus **68 neologisms**
sneelock's 1, mcgurk 1, mcgurkus 4, horn-tooting 11, jorn 11, olf 13, mysolf 13, frumm 14, drum-tummied 14, snumm 14, drum-tummy's 14, foon 16, walloo 18, lassoo 18, wink-hood 20, wink-hooded 20, brigger-ba-root 23, shouldsters 27, tent-of all-tents 27, parade-of-parades 27, fling-flang 28, organ-mcorgan-mcgurkus 28, bummbeling 28, super-stoo-pendus 28, stoo-mendus 28, stoo-roarus 28, fluff-muffled 31, huffle 31, lurch 31, fibbel 31, harp-twanging 31, snarp 31, three-snarper-harp 31, bloops 31, three-nozzled 31, bloozer 31, nolster 31, floops 31, one-nozzled 31, noozer 31, to-an-fro 33, fros 33, tos 33, enormance 34, slippingly 34, stickle-bush 34, roller-skate-skis 34, spotted atrocious 36, trapeezing 39, zoom-a zoop 39, ben-deezing 39, zoop 39, ei 40, eyses 40, life-risking-track 43, colliding-collusions 43, abrasion-contusions 43, brute-strength 45, champ-of-all-champs 45, grizzly-ghastly 45, fastly 45, through-horns-jumping-deer 46, spout-rider 48, bopps 50, jawks 50, jeers 50, roust-about-joust 50, ruckus-ing 53, soobrian 53.

If I Ran the Zoo **62 neologisms**
mcgrew 1, un-usual 4, four-footed 6, gol-darndest 6, sort-of-a-hen 8, zoo-keeper's 10, elephant-cat 10, out-of-the-way 12, skeegle-mobile 12, what-do-you-know 12, zomba-ma-tant 14, flustard 14, motta-fa-potta-fa-pell 17, joats 18, squirrel-skin 18, lunks 21, scraggle-foot 26, zind 26, south-east 28, north-eastern 28, bad-animal-catching-machine 30, thwerll 21, snerl 32, chuggs 33, keen-shooter 33, mean-shooter 33, bean-shooter 33,yerka 34, tizzle-topped 34, gootch 38, nantasket 38, kartoom 40, natch 40, cooker-mobile 40, tobsk 42, nobsk 42, obsk 42, thing-a-ma-bobsk 42, corn-on-the-cobsk 42, mobsk 42, jobsk 42, palooski 44, headski 44, redski 44, blueski 44, zooski 44, mcgrewski 44, ka-troo 46, it-kutch 46, preep 46, proo 46, nerkle 47, hippo-no-hungus 49, bippo-no-bungus 49, dippo-no-dungus 49, nippo-no-nungus 49, nungus 49, dungus 49, bips 49, fizza-ma-wizza-ma-dill 50, gwark 50, mcgrewses 50.

In a People House **0 neologisms**

The King's Stilts **10 neologisms**
birtram 1, binn 2, droon 2, nizzards 5, chief-in-charge-of-fish 10, nizzardly 10, black-spotted 12, stilt-walking16, droonish 26, g-r-ritch 32.

The Lorax **40 neologisms**
grickle-grass 1, lorax 1, once-ler 3, lerkim 4, miff-muffered 4, moof 4, snuvv 9, gruvvulous 9, whisper-ma-phone 9, slupp 10, slupps 10, once-ler's 10, snergelly 10, swomee-swans 12, truffula 12, bar-ba-loots 14, rippulous 15, humming-fish 15, thneed 18, ga-zump 20, fine-something-that-all-people-need 24, radio-phone 29, nitch 29, sitch 29, thneeds 30, super-axe-hacker 33, crummies 35, biggered 39, biggering 39, old-nuisance 40, snarggled 40, cruffulous 40, smogulous 40, smogged-up 43, gluppity-glupp 44, schloppity-schlopp 44, glumping 47, yap-yap 49, figgering 49, smoke-smuggered 52.

Marvin K. Mooney, Will You Please Go Now! **5 neologisms**
zike-bike 8, crunk-car 13, zumble-zay 17, bumble-boat 19, ga-zoom 20.

Maybe You Should Fly a Jet! Maybe You Should be a Vet! **5 neologisms**
tromboner 14, perker 18, hiver 25, vester 36, foice 38.

McElligot's Pool **8 neologisms**
umbroso 8, sneeden's 9, high-jumping 18, friskers 18, fast-moving 36, over-arm 36, deep-divers 44, glurk 44, thing-a-ma-jigger 48.

Mr. Brown Can Moo! Can you? **3 neologisms**
klopp 5, dopp 8, splatt 13

My Book About Me, by Me, Myself **0 neologisms**

My Many Colored Days **0 neologisms**

Oh, Say Can You Say? **42 neologisms**
looey 1, finney's 2, finney 2, dinn 4, dinn's 4, pinner 5, blinn 5, shin-pin 5, grox 10, groxes 10, zipp's 13, fuddnuddler 14, bipper 14, jipper 14, hud 14, dinwoodie 14, dinty 14, fud 14, slinkey 14, stinkey 14, lud 14, quack-quacks 16, quacker 16, quacker-backer 16, schnacks 17, briggs 20, fred-fed 22, klotz 25, glotz 25, flapped-jack 26, blue-footed 29, true-footed 29, trick-fingered 29,slick-fingered 29, six-fingered 29, six-stringed 29, skrope 30, souped-up 31, soup-off-hoops 31, bird-flight 35, night-sight 35, blispers 36, bliskers 36.

Oh, the Places You'll Go! **16 neologisms**
not-so-good 4, footsy 8, bang-ups 17, prickle-ly 17, un-slumping 19, right-and-three-quarters 21, mind-maker-upper 21, break-necking 23, weirdish 23, flapped-jack 26, flip-flapping 29, winning-est 31, some times 33, hakken-kraks 36, bauxbaum 44, bixby 44.

Oh, the Thinks You Can Think! **12 neologisms**
schlopp 7, snuvs 8, krauss 11, bloogs 12, na-nupp 14, da-dake 16, zong 21, rink-rinker-fink 22, jibboo 25, vipper 32, vipp 32, beft 35.

On Beyond Zebra! **45 neologisms**
o'dell 1, yuzz-a-ma-tuzz 6, wumbus 9, umbus 10, swampf 13, swumpf 13, humpf 13, humpf-humpf-a- dumpfer 13, fuddle-dee-duddle 14, bird-of-a-bird-of-a-bird-of 14, fuddle-dee-duddle's 14, muddle-dee-puddles 14, glikker 16, septumber 16, nutches 18, nitches 18, sneedle 20, mos-keedle 20, hum-dinger 20, thnadners 25, gee-whiz 25, spazzim 26, nazzim 26, bazzim 26, popping-corn 26, floob-boober-bab-boober-bubs 28, zatz-it 31, three-seater 31, nose-patting 31, jogg-oons 33, step-sister 33, flunnel 35, o'grunth 35, fun-th 35, tun-th 35, one-th 35, itch-a-pods 37, where-so-ever 37, yekko 38, gekko 38, yekkos 38, gargel-orum 42, nubb 42, bunglefield 42, yupster 42, nipswich 42.

One Fish, Two Fish, Red Fish, Blue Fish **10 neologisms**
wump 18, gump 19, zans 37, gox 38, ying 40, yink 42, yop 44, ish 56, gack 58, zeep 62.

The Pop-up Mice of Mr. Brice **4 neologisms**
bimmy 2, quackenbush 3, yipper 3, brice-mice 16

Scrambled Eggs Super! **47 neologisms**
hooper 1, ruffle-necked 4, sala-ma-goox 4, sala-ma-goox's 5, tizzle-topped 7, mop-noodled 10, beagle-beaked-bald-headed 10, grinch 10, shade-roosting 10, lass-a-lack's 10, flannel-wing 10, super-dee-dooper-dee-booper 12, twiddler 15, kweet 16, beezlenut 16, stroodel 18, gooey 18, kwigger 21, long-legger 23, kwong 23, fa-zoal 24, katta-ma-side 24, sea-leopard's 24, grice 24, squitsch 24, pelf 26, single-file 29, zummzian 29, zuks 29, zumms 29, zummz 29, strookoo 30, klammering 32, three-eyelashed 34, ham-ikka-schnim-ikka-schnam-ikka 34, schnopp 34, south-west-facing 36, grickily 38, gractus 38, ziffs 40, zuffs 40, moth-watching 42, sneth 42, dawf 44, zinzibar-zanzibar 44, jill-ikka-jast 44, fleet-footed 44.

The Seven Lady Godivas **9 neologisms**
fluffy-duff 2, gawp 16, tip-hoof 30, bru na boinn 36, cuin selinn 36, brenig lag 36, thwil-on-thyne 36, thought-lanes 54, nink.

The Shape of Me and Other Stuff **1 neologism**
blogg 23.

The Sneetches and Other Stories **44 neologisms**
star-belly 1, sneetches 1, plain-belly 1, thars 1, mcmonkey 7, mcbean 7, fix-it-up 7, chappie 7, sneetch 8, klonked 9, bonked 9, berked 9, star-off 17, star-bellies 21.

The Zax
prax 27, north-going 27, zax 27, south-going 27, un-budged 35.

Too Many Daves
mccave 37, mccaves' 41, bodkin 41, hoos-foos 41, snimm 41, hot-shot 41, blinkey 41, stinkey 41, o'gravel 41, ziggy 41, biffalo buff 41, sneepy 41, zutt 41, boliver 41, butt 41, buck-buck 41, mcfate 41.

What was I Scared of?
grin-itch 48, doubt-trout 50, roover 50, brickel 52, brickels 52, snide 54, snide-field 54.

Ten Apples Up on Top! **0 neologisms**

There's a Wocket in My Pocket! **33 neologisms**
wocket front cover, findow cover pg., gase, cover pg., wasket 1, nureau 2, woset 3, jertain 4, zlock 5, zelf 6, nink 8, zamp 9, yot 10, yottle 11, zable 12, ghair 12, bofa 13, nupboards 14, nooth 15, grush 15, vug 16, quimney 18, zall 19, yeps 20, tellar 22, nellar 22, gellar 22, dellar 22, bellar 22, wellar 22, zellar 22, geeling 24, zower 25, zillow 26.

Thidwick: The Big-Hearted Moose **14 neologisms**
winna-bango 1, moose-moss 1, thidwick 2, bingle 2, big-hearted 3, tree-spider 4, zinn-a-zu 6, moose-hair 7, thidwick's 8, skat 17, freezy 19, bang-binging 26, bang-bouncing 29, hard-
hearted 29.

The Tooth Book **2 neologisms**
queek 18, klucks 19.

Wacky Wednesday **0 neologisms**

Yertle the Turtle and Other Stories **14 neologisms**
far-away 1, sala-ma-sond 1, yertle 1, nine-turtle 5.

Gertrude McFuzz
girl-bird 30, mcfuzz 30, droopy-droop 30, lolla-lee-lou 31, dake 32, pill-berry 33, zang 38, ninety pound 40.

The Big Brag
whuffed 59, snaff 59.

You're Only Old Once! **26 neologisms**
fott-fa-zee 3, potassium-free 3, tutt-a-tutt 3, optoglymics 5, dermoglymics 5, finicky-finick 8, winick 8, quiz-docs 8, questionnairing 8, norval 14, nooronetics 14, whelden 24, stethed 27, smoot 27, wuff-whiffer 32, diet-devising 32, sniff-scan 32, spreckles 35, nextly 35, ginns 35, mcgrew 35, blinn 35, ballew 35, timpkins 35, loganberry-colored 36, oranged-tinted 36.

PHONOLOGICAL ASPECTS OF GLOSSOLALIA: A RESPONSE TO MOTLEY

Dawn Heverly

INTRODUCTION

Samarin (1972, p. 2) defines glossolalia, or speaking-in-tongues, as a "meaningless but phonologically structured human utterance believed by the speaker to be a real language but bearing no systematic resemblance to any natural language, living or dead." Motley, in his 1981 article, "A Linguistic analysis of glossolalia: evidence of unique psycholinguistic processing," claims that his examples of glossolalia are, in a number of ways, language-like yet unlike the first language (L1) of the speaker. This paper examines the question: to what extent are Motley's findings atypical of glossolalia? (An initial assumption, obviously, is that they are.) Motley's findings in the areas of phonetic inventory, non-native phonemes, and consonant clusters are compared to findings based on data from twenty-six other glossolalia texts. Additionally, this paper touches on two topics not specifically treated in Motley - core syllables and markedness relationships.

METHODS AND DATA

The first step in this study was the collection of glossolalia samples. Researchers have spent years gaining the trust of glossolalists in order to record and transcribe their utterances (e.g., Goodman). Due to time constraints, collection from primary sources was not possible. All but one of the glossolalia samples were found in the literature. The remaining sample is a transcription made by the author of an utterance from a radio program.

Four methodological issues surfaced immediately. The samples in the present study come, of necessity, from a limited number of sources. Although numerous books and articles have been written by linguists, psychologists, and anthropologists, among others, very few contain samples texts. The works which do contain samples often cite the same ones (e.g., Samarin and Jaquith). Many of the texts are short - only a line or two. Many of the samples are either not transcribed by linguists or not transcribed in the International Phonetic Alphabet (IPA), leaving room for interpretation. Finally, only one author - Goodman - includes samples from speakers whose L1 is something other than English. From her work are samples from Dutch, Spanish, and Maya L1 speakers. All that having been said, however, the value of this study is in the number and relative variety (sources and L1s) of the sample texts.

The sample texts are given in the Appendix. Both a rough version of the sample as it appears in the original text and an IPA transcription made by this author are given.

The first two samples are from Motley (1981, p. 27) Both are from the same subject - a male English-speaker with no known exposure to other languages via trips, courses or other avenues. He was able to produce, upon request, two separate varieties, labeled by Motley "Variety I" and "Variety II" (p. 19). Motley phonetically transcribed and analyzed four three-minute samples of Variety I and two three-minute samples of Variety II. Sample A of the current study consists of fragments from a few lines provided by Motley of Variety I and Sample B is from Variety II.

Samples C through F are found in Goodman (1972). Goodman designed her fieldwork based on the conception of "the glossolalia utterance as an artifact of a hyperaroused mental state or, in Chomskyan terms, as the surface structure of a nonlinguistic deep structure, that of the altered state of consciousness" (1972, p. 8). She sought out groups whose L1s represented a linguistic variety. All her phonetic transcriptions are in IPA. Sample C is that of a Dutch evangelist on the Caribbean Island of St. Vincent. Sample F is from a member of his congregation. Sample D is from a Spanish - speaker in Mexico City and Sample E, from a Maya-speaker in Utzpak, Yucatan. The Maya-speaker is bilingual in Maya and Spanish, but more fluent in Maya (Goodman, 1972, p. 119).

Patsy Sims' Can Somebody Shout Amen! (1988) is the source of Samples G through I. Her subjects are all American English speakers. Sims uses what appears to be an informal phonetic transcription. Her transcription was interpreted based on normal orthographic conventions. Samples G and H were judged to be from two separate individuals (G from a female congregation-member and H from her minister). As their "messages mingled," however, there is a possibility that both are from the minister (Sims, 1988, p. 39). Sample I is from a minister at another site.

Samples J through L each come from a separate source. Sample J is a speaker of American English quoted in Kildahl (1972). Sample K appears in Certeau (1996). And Sample L is from Wolfram (1966), cited in Malony & Lovekin (1985). Sample J does not appear to be a phonetic transcription, while Samples K and L are phonetic transcriptions, albeit not in IPA.

The remaining samples (with the exception of the last) are from Samarin (1972). The IPA transcriptions of his texts are based on notes provided on pages 58 and 252. He found Samples M and N in Jaquith (1967) and altered the orthography to be consistent with his own. The former is from a song, and the latter, from a speech. Among Samarin's texts are ten (Samples R-AA) provided by respondents to a questionnaire. The respondents were asked to write down, as best they could, words they recalled from their tongues or from the tongues of other people (Samarin, 1972, p. 252). While these ten texts may not carry the same legitimacy of the others, they were included in order to increase the size of the data base. The IPA transcription of these recollections was based on normal orthographic conventions.

TABLE 1. Consonant Inventory

	p	b	t	d	k	g	ʔ	tʃ	dʒ	f	v	θ	ð	s	z	ʃ	ʒ	x	h	m	n	ŋ	l	ɹ	w	j
A	X	X	X	X	X						X			X						X	X		X	X		
B	X	X	X	X	X						X			X		X				X	X		X	X		
C				X	X		X												X		X		X			
D		X			X									X					X				X		X	X
E		X					X							X						X				X	X	
F			X	X	X		X												X	X	X		X			
G		X		X															X				X	X		
H		X	X	X	X									X					X	X				X		
I	X	X	X		X									X		X			X	X	X		X	X		X
J					X									X					X	X	X			X		X
K					X									X		X				X	X				X	X
L	X	X	X	X	X					X	X			X	X				X	X	X		X	X		
M					X														X		X		X	X		X
N	X		X	X	X														X		X		X	X	X	X
O		X	X	X	X					X				X					X	X	X		X	X		X
P	X	X	X	X	X									X					X	X	X		X	X		X
Q	X		X								X			X		X			X	X	X		X	X	X	X
R		X		X	X									X						X	X		X	X		
S		X		X	X					X	X			X	X	X				X	X		X			
T		X		X	X	X								X		X	X			X	X		X	X		
U	X				X			X						X					X	X	X		X			
V		X	X	X	X	X					X				X				X	X	X		X			
W	X			X	X					X				X							X		X	X		
X			X		X									X						X	X			X		X
Y		X	X	X	X	X			X					X		X				X	X		X	X	X	X
Z			X		X														X	X	X		X			
AA			X													X			X	X	X		X			X
AB			X	X	X			X						X				X		X	X					X

TABLE 2. Vowel Inventory

	i	ɪ	e	ɛ	ø	ɔ	ɯ	ʌ	ɑ	u	ʊ	o	ɔ	ɑɪ	ɔɪ
A	X		X						X			X			
B	X		X						X			X			
C	X								X	X		X			
D	X			X	X	X	X		X	X					
E	X					X			X			X			
F	X			X					X	X		X			
G	X								X					X	
H	X			X				X	X	X		X		X	
I	X			X					X		X	X			
J	X								X			X		X	
K	X		X						X			X			
L	X			X				X	X	X		X			
M	X		X						X			X	X		
N	X	X		X				X	X	X		X	X		
O	X							X	X			X			
P	X							X	X			X	X		
Q	X	X		X				X	X	X		X			
R	X								X	X		X	X	X	
S	X					X			X	X		X			
T	X		X						X	X	X	X			
U	X		X	X					X	X	X	X	X		
V	X		X						X			X			
W	X		X	X						X	X	X	X		
X	X		X	X					X			X			
Y	X			X					X	X		X			
Z	X								X			X			
AA	X								X			X			X
AB	X					X			X					X	

RESULTS AND DISCUSSION

The phonetic inventory.

Tables 1 and 2 list the consonants and vowels identified in each of the samples. Motley found that his subject's two varieties of glossolalia "contain as many phone types (~30) as most languages do phonemes (25-40)" (1981, 20). (Looking at the samples Motley provides, however, it must be noted that approximately 15 phonemes appear to be present in Sample A and 16 phonemes, in Sample B. It can only be assumed that the remaining phonemes would be identified if his entire transcription were provided.)

The findings in the current study differ. The mean number of phonemes in the samples is 14. The range of phonemes is 8-20. The sample at the high end of this range approaches the low end of the range Motley gives for most languages. However, his samples contain almost twice the average number of phonemes as the samples in the current study.

Non-native phonemes.

Motley finds that "the overall impression provided by the place-and-manner charts of both glossolalia varieties is that their features are obviously nonEnglish" (1981. P. 22). He continues by stating that his analysis "clearly contradicts Jaquith's finding that glossolalia contains no non-native phones" (Jaquith, 1967, in Motley, 1981, p. 22). The data in the current study contain non-native phonemes but they are relatively rare.

English. Only one non-native phoneme was found among the English L1 samples. The remaining phonemes all appear in tables of consonants, vowels, and diphthongs of American English (Edwards, 1997, pp. 34, 35). The non-native phoneme is the [x] in Sample AB. A possible explanation for the presence of this [x] comes from the Aramaic phrase "lama sabachthani." This phrase appears in English-language versions of the Bible (e.g., Scofield, 1967, p. 1073). This writer, while ignorant of the correct pronunciation of this phrase, has heard it pronounced as [lama sabaxθani]. The subject may easily hear this phrase, with this pronunciation, at least annually. If indeed she does, the appearance in her glossolalia of a phoneme she hears at a religious service should not be surprising due to the fact that she views her speaking-in-tongues as "God's language" (Firth).

Dutch. All the phonemes present in Sample C, that of a Dutch L1 speaker, are present in Dutch. This determination was made by referring to Harmsen's Sound and spelling of Dutch (1995).

Maya. Mayan is a language family. Goodman describes the subject of Sample E as a bilingual Maya/Spanish speaker, more fluent in Maya, residing in Utzpak, Yucatan (Goodman, 1972, p.119). (Maya and Mayan are being used interchangeably, as used in the individual sources). A phonetic description of Tzotzil Mayan, spoken in Zinacantan, also in Yucatan, is available on-line (Haviland, 1980). (Maya or Mayan is not listed in Maddieson, 1984.) Goodman uses a schwa once in her transcription of this sample. Tzotzil Mayan does not use a schwa. This omission should not be considered grave, however. In English, a schwa may be used for any reduced vowel in an unstressed syllable (Edwards, 1997, 254). Perhaps Goodman heard a reduced vowel on the one occasion when she used this symbol in this sample. Other than the schwa, all the phonemes in Sample E are found in Tzotzil Mayan, either originally or through Spanish loan words. ([w] is found only in Spanish loan words.)

Spanish. The transcription of Sample D, the Spanish L1 sample, contains an [h]. This consonant is not voiced in Spanish. The other consonants in the sample do appear in Spanish.

Goodman uses seven vowels in her transcription. According to Maddieson, Spanish does not use at least three of these vowels - the [ø], the [ɯ], and the schwa (discussed above). It is probably safe to assume that Goodman's [ɛ] is the vowel Maddieson describes as a Spanish vowel slightly higher than [ɛ] and slightly lower than [e] (1984, p. 267).

Thus, non-native phonemes appear in only three (11.5%) of the non-Motley samples. If the schwa in Maya is disregarded, this figure drops to two (7.7%). The specific non-native phonemes are [x], probably heard in a religious service; [h], only used orthographically in Spanish; and three vowels - [ø], [ɯ], and [ə].

Consonant clusters.

Motley found both his varieties "rich" in consonant clusters (1981, p. 22). This observation is significant because earlier studies noted a lack of consonant clusters in glossolalia. The excerpted portion of Motley's first variety (Sample A) contains the cluster [fw], a cluster not allowed in English (Kenstowicz, 1996, p. 256). In the second variety (Sample B) appear [pr], [tr], and [kr], all allowable in English.

One interpretation decision was made in identifying consonant clusters in the non-Motley samples. The "sph" of "sphona" in Sample S, is being read as [sf].

Of the non-Motley samples, seven (27%) contain clusters. Samples G and H contain [br]. Sample G is the text of a congregation-member and Sample H, that of her minister. Goodman writes that "the stereotyped utterance mirrors that of the person who guided the glossolalist into the behavior. There is little variation of sound patterns within the group arising around a particular guide" (1972, p. 123). Hence the appearance of a cluster in these two separate samples is mitigated by the fact that the congregation member of Sample G was probably introduced into speaking-in-tongues by the speaker of Sample H.

Four of the seven non-Motley samples containing consonant clusters are recollection samples. Sample S contains [sf]; Sample V, [dv] and [ghz]; Sample W, [pl] and [pr]; and Sample Y, [gw], [kw], [gr], and [sj].

The remaining consonant cluster sample, Q, contains [vw].

Consonant clusters not allowed in English appear in only two (8%) of the non-Motley samples - [dv] and [ghz] in Sample V and [vw] in Sample Q. (Although Kenstowicz does not list [sf] as an allowable English onset cluster (1996, p. 256), it does appear in words such as sphinx [sfinks] and sphere [sfir].)

Core syllable inventories.

Of all the logically possible combinations that can be formed of the syllable types CV, V, CVC, and VC, the combinations found across languages are limited to four (Clements & Keyser, 1983, in Clements, 1988, p. 67). Additionally, Clements generalizes that "a closed syllable type implies the corresponding open syllable type, and a vowel-initial syllable type implies the corresponding consonant-initial type" (1988, p. 67).

TABLE 3. Core Syllables

	CV	V	CVC	VC	TYPE
A	X	X	X	X	IV
B	X	X	X		V
C	X		X		III
D	X	X	X	X	IV
E	X	X	X		V
F	X	X	X		V
G	X	X			II
H	X	X	X		V
I	X	X	X		V
J	X	X			II
K	X	X			II
L	X	X	X	X	IV
M	X	X			II
N	X	X	X	X	IV
O	X	X	X	X	IV
P	X	X	X	X	IV
Q	X		X		III
R	X	X	X	X	IV
S	X	X	X		V
T	X	X	X		V
U	X	X	X	X	V
V	X	X			II
W	X	X	X	X	IV
X	X	X			II
Y	X	X	X	X	IV
Z	X	X			II
AA	X	X	X		II
AB	X				I

The syllable types identified in the glossolalia texts are given on Table 3. A listing of the inventories and the number and percentage of samples using each is given below. An additional inventory has been invented to capture the CV, V, CVC combination present in 28.6% of the samples. It is given as V on the table.

I. CV	1	3.6%
II. CV, V	8	28.6%
III. CV, CVC	2	7.1%
IV. CV, V, CVC, VC	9	32.1%
V. CV, V, CVC	8	28.6%

Although the CV, V, CVC inventory does not appear on Clements' list, it is consistent with his generalizations above.

Markedness relationships.

In languages, the occurrence of a specific segment type may imply the occurrence of another segment type. When this happens, the first segment type is considered marked relative to the second segment type. It has been found that fricatives are marked relative to stops; voiced stops are marked relative to voiceless stops; and voiced fricatives are marked relative to voiceless fricatives (Eckman & Iverson, 1993, p. 241).

TABLE 4. Markedness Relationships

	Fricative	Stop	Voiced Stop	Voiceless Stop	Voiced Fricative	Voiceless Fricative
A	x	x	x	x		
B	x	x	x	x	x	x
C	x	x	x	x		
D	x	x	x	x		
E	x	x	x	x		
F	x	x	x	x		
G	x	x	x	-		
H	x	x	x	x		
I	x	x	x	x		
J	x	x				
K	x	x				
L	x	x	x	x	x	x
M	x	x				
N	x	x	x	x		
O	x	x	x	x		
P	x	x	x	x		
Q	x	x			x	x
R	x	x	x	x		
S	x	x	x	x	x	x
T	x	x	x	x	x	x
U	x	x				
V	x	x	x	x	x	x
W	x	x	x	x		
X	x	x				
Y	x	x	x	x	x	x
Z	x	x				
AA	x	x				
AB	x	x	x	x		

The glossolalia texts were examined to determine the extent to which these markedness relationships held. The results appear on Table 4. When a sample contained a marked segment (i.e., fricative, voiced stop, voiced fricative) a search was made for the corresponding unmarked segment (i.e., stop, voiceless stop, voiceless fricative). If the marked segment was not present, its corresponding unmarked segment was not looked for as its presence or absence was not relevant. (The affricate [dʒ] in Sample Y was treated as a voiced stop plus voiced fricative.)

The markedness relationships hold in all but one of the samples. Sample G contains a voiced stop but no voiceless stop. The full text of Sample G, however, resembles "abracadabra" and variations there of. Perhaps, then, it is not surprising that this sample does not conform. The remaining 96% of samples demonstrate the markedness relationships.

CONCLUSION

This analysis of data from twenty-eight samples of glossolalia demonstrates that Motley's phoneme inventory, non-native phoneme, and consonant cluster findings are atypical of glossolalia.

Motley found approximately thirty phonemes in his samples. The mean number of phonemes in the samples in this study is 14. The range is 8-20. Motley's samples contain almost twice the average number of phonemes as the samples in this study.

Non-native phonemes appear in only three (11.5%) of the non-Motley samples (two or 7.7% if the schwa in Maya is disregarded). The non-native phonemes present are [x], probably heard in a religious service; [h], only used orthographically in Spanish; and three vowels - [ø], [ɯ], and [ə].

Seven (27%) of the non-Motley samples contain consonant clusters. Two (8%) contain consonant clusters not allowed in English.

Additionally, it has been shown that 28.6% of the samples, while conforming to Clements' generalizations about syllable structure, do not conform to one of the four core syllable inventories. Finally, the markedness relationships described in Eckman and Iverson held in 96% of the samples.

Motley may be justified in claiming that the glossolalia examples he has found are, in a number of ways, language-like yet unlike the L1 of the speaker. Given the atypicality of his samples, however, it would not be sound to extend this claim to glossolalia in general. The phoneme inventory and consonant cluster findings of this study are significant. The paucity of non-native phonemes is striking. This paucity will no doubt prove disappointing for readers hoping to find support for the idea of an other-than-human source for glossolalia, a topic admittedly well beyond the scope of this paper.

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APPENDIX, SAMPLE TEXTS

A. Motley (1981, p. 27)

[tinto lapaltara vevisisio komosobɹintinisiantadeɹo pemaɹamando]	tinto lapaltara vevisisio komosobrintinisiantadero pemaramando

B. Motley (1981, p. 27)

[pɹeʃnive kɹapɹetaveʃ inamo labɹosele apɹotave dɹeʃetrave]	preʃnive krapretaveʃ inamo labrosele aprotave dreʃetrave

C. Goodman (1972, p. 108)

[hunda handalanda ʔikala lololo lu]	hunda handalanda ʔikala lololo lu

D Goodman (1972, p. 115)

[ʔuwa sjøh ʔəh sihøh ʔɯhsiah ʔɯbulia ʔɯ ʔɯbulia ʔɯ ʔai kihɛh]	ʔuwa syoh ʔəh sihøh ʔɯhsiah ʔai kihɛh

E. Goodman (1972, p. 122)

[boʔi sai boi siɹi siɹia ʔioɹi saʔi wai baʔ simai soi siɹiʔai soʔiʔiʔi baiʔiʔiʔi siʔiʔiʔə] siʔiʔiʔə	boʔi sai boi siri siria ʔiori saʔi wai baʔ simai soi siriʔai soʔiʔiʔi. baiʔiʔiʔi

F. Goodman (1972, p. 106)

[huntala hun maʔan diɛ hanandada kontola]	huntala hun maʔtan diɛ hanandada kontola

G. Sims (1988, pp. 38-39)

[ahabɹababa balabahaɹ dadi a]	Ahabrababah-balabahai! dadi-ah!

H. Sims (1988, pp. 39-43)

(1) [ɛ kʌmdɛka kakakubɹa akoɹi]	Eh-comdeka-kakakubra akori
(1) [hata ɹababa kuɹabasa duɹabaɹ]	Hatah-rababa-kurabasah-durabai!

I. Sims (1988, pp. 182-184)

(1) [hatɛ samo a poɹa ti ato]	Hate-samo-ah-pora-ti-ahto
(2) [ʃa na hoja]	sha-na-hoya
(3) [kumbɛkoja lohoja]	Kumbekoyah-lohoyah

J. Kildahl (1972, p. 1)

[iana kana saɹi jahaɹ o saɹamaɹ]	Iana, kanna, saree, yahai, oh saramai

K. De Certeau (1996, p. 29)

[swina o kwina kana maja ʃana ina kwena]	swina o kwina kana maja Sana ina kwena

L. Wolfram (1966, p. 31, in Malony & Lovekin, 1985, p. 32)

(1) [hoɹdo do maɹta lɛbntɛntantala]	hordo do marta, lebntentantala,
(2) [tʌzɹusutu lapa ʌn kɛa zivolo]	tuzrusutu, lapa, unkea zivolo
(3) [nufaɹo tuloɛ]	nufaro tuloe

M. Jaquith (1967, in Samarin, 1972, p. 252)

[kelakelahɔɹajanajelalaijelajanaijo]	Kelakelahorayanayelalaiyelayaanaiyo

N. Jaquith (1967, in Samarin, 1972, p. 252)

(1) [palaɹnjanokojijʌlalainakajuwaɹa]	palainyanokoyiyalalainakayuwara
(2) [halajonɪnhɪɹakʌjaɹnjijakatɔdɔɪna]	halayoninhirakayainyiyakatodoinna
(3) [ɛɹa]	era

O. Samarin (1972, p. 253)

(1) [tahandoɹia]	tahandoria
(2) [fiandolokolʌmʌbʌbʌsi]	fiandolokolamababasi
(3) [lamokajʌmasi]	lamokayamasi

P. Samarin (1972, p. 253)

(1) [kandʌhɔndo]	kandahondo
(2) [mahapʌkʌhandohai]	mahapakahandohai
(3) [lahambakati jahamʌsi]	lahambakati, yahamasi
(4) [masiando kʌtandoɹi]	masiando, katandori.

Q. Samarin (1972, p. 253)

(1) [tivʌtʌʃataw vwaɹisitivɪɹisi]	tivatashataw vwarisitivirisi.
(2) [sʌvaɹʌʃʌtʌpoɹati]	savarashataporati
(3) [ɹajʌti tuvʌlisitʌliʃi]	rayati tuvalisitalishi
(4) [witʌtaɹihin ʃʌtativiʃɛnti]	witatarihin shatativishenti.
(5) [moɹitʌtʌvʌtʌʃi]	moritatavatashi

R . Samarin (1972, p. 253)

[ama kɔnda amus kiamo diamo mo ma daɪmos. ako mala amos siamakamos boɹaɔnba]	Ama conda amus. Keamo deamo no ma diamos. Aako mala amos ceamakaamos boraonba.

S. Samarin (1972, p. 253)

[ki ladia sfona sa nania ʃu ka lana moba dəsin vi ladia so boda ʃan za]	ki ladia sphona sa nania shuh ka lana moba deseen vi ladia so boda shan za

T . Samarin (1972, p. 254)

[la ɹe gu ʃi a munde ɹa kumbisando laʒia]	La Re Gu She a Munde Ra, Kumbisando, Lagia,.

U. Samarin (1972, p. 254)

[kanum atʃɛniko holikanəpe ɔfɔnamatʃi lenia amakenu politʃinia sɛnie]	Canum acheniko holiconapay ofonamachi lenia amakaynu polichinia seniay

V . Samarin (1972, p. 254)
[ki a na ma na la gi a va ta le a dva da bo va di va vo ghza] ke a na ma na, la ghee - a va ta. le a dva da. Bo va dee va vo ghza

W. Samarin (1972, p. 254)
[ple kun dɛl i kwɛs pɛl suɛl pɹolok dɔs fundos ɛn de dɛn dus] play coon del e cues pel suel proloque doss fundos en day den doos

X. Samarin (1972, p. 254)
[yo ke ti asa mo kitakɛ ana se so ja ka nasa toɹea me mosa aɹiɛ te ɛna] yo kay ti-assa-mo keetake-ana say so ya ka-nasa-towrea may mosa-arie-te-enna

Y. Samarin (1972, p. 254)
[uliamba magaʃami anddʒɛsta miliamba gɹakimi Uliamba magashami andjesta miliamba. Grakimi anddʒalu ʃjikambi gwadialu amdʒɛsta o kwanti] andjalu. Sjikambi guadialu amjesta. o kwanti

Z. Samarin (1972, p. 254)
[hiliato ka hola lama nati liato ala manata] hileato ka hola lama nati leato ala manata

AA. Samarin (1972, p. 254)
[inana malata haʃa mo lotohɔɹja alanaja] eenanah malata hasha mow lotohoya alanaya

AB. Firth
[sitaxaminamatʃisataɪ dakadijaɪnamasikaɪdaɪtakaɪnaɪ sətidaxaɪnaɪ

THE SONORITY SEQUENCING PRINCIPLE IN INTERLANGUAGE PHONOLOGY

Sheryl Sherwin

INTRODUCTION

It is widely recognized that the Sonority Sequencing Principle plays a significant role in the organization of syllables in natural languages. This study looks at the possible role that the Sonority Sequencing Principle (SSP) plays in the syllables of interlanguages. Specifically, it examines the pronunciations of initial two-consonant clusters in English that violate the SSP by L2 students whose native language does not include initial consonant clusters. The question posed is this: If students have no knowledge of consonant clusters from their own language, will they treat initial consonant clusters that do not violate the SSP differently from those that do? If the SSP is not a universal principle in interlanguage phonology it is speculated that the two types of consonant clusters will not be treated differently. If, on the other hand, it does play a role in interlanguage phonology, it is predicted that the students will treat them differently.

THE SONORITY SEQUENCING PRINCIPLE

First, what is the Sonority Sequencing Principle? Blevins (1996) defines it this way: Between any member of a syllable and the syllable peak, a sonority rise or plateau must occur. This in turn asks the question: What is sonority? Carr (1993) describes it in articulatory terms as the degree to which the airsteam is blocked or constricted and adds that voicing is required to produce sonority. Blevins (1996) suggests that, although it is contested, acoustic intensity is often used to measure saliency or loudness of segments. Those segments that are the most salient are the most sonorous. Within the context of the various definitions it is accepted that vowels are the most sonorous segments and thus form the peak or nucleus of each syllable. Segments in the syllable are less sonorous as they "move out" from the syllable peak. A scale of sonority for the natural classes of sounds or segments has been developed. Clements' s (1992) sonority scale included five natural classes (going from most sonorous to least): vowels, glides, liquids, nasals, and obstruents.

Carr (1993) and others suggest that obstruents be subdivided into fricatives and stops. The Sonority Index developed by Broselow and Finer (1991), for example, lists the stops and fricatives as separate classes, as shown in (1).

(1)

Class	Scale
Stops	1
Fricatives	2
Nasals	3
Liquids	4
Glides	5

They go one step further by proposing that there is a scale of sonority within the stops and fricatives. They suggest that voicing is also a factor and present this sub-scale of sonority:

(2) Least Sonorous — Most Sonorous
Voiceless Stops | Voiced Stops | Voiceless Fricatives | Voiced Fricative

According to Broselow and Finer these scales form the basis for identifying degrees of markedness in consonant clusters which in turn help to predict the degree of difficulty that L2 learners will have in mastering different consonant clusters.

Tropf (1986) also proposed that in the canonical syllable structure, going from the syllable peak to the edges of the syllable, the fricatives come before the plosives, or stops. Since the fricative /s/, appearing before the stops /p, t, k/, represents the supposed SSP violation in English, the following scale, which recognized a distinction between stops and fricatives, will be recognized for this study:

(3) Most Sonorous — Least Sonorous
Vowels > Glides > Liquids > Nasals > Fricatives > Stops

As just mentioned, there are exceptions or violations of this principle found in English and some other languages. In English the violations occur in the syllable-initial consonant clusters of /sp/, /st/, and /sk/, where the stops (/p, t, k/), which are the least sonorous, are closer to the syllable peak. The fricative /s/, which is more sonorous than the stops, is on the outer edge of the syllable. /s/ is exceptional in that it is the only English phoneme involved in SSP violations. Clements (1992) suggests that the /s/ may be extrasyllabic, that is it is a syllable itself. This idea will be discussed further in this paper.

According to Carlisle (1992), consonant clusters that violate the SSP are considered more marked than clusters that abide by the SSP. In that regard it is hypothesized that the more marked consonant clusters will be more difficult for second language learners to pronounce and this is the focus of the current study.

BACKGROUND OF INTERLANGUAGE STUDIES

The importance of studying interlanguages within the field of linguistics has not always been recognized. Major (1996) provides some historical perspective. Early research focused on the native language and its influence on second language acquisition. Analysis contrasting the native language and the target language was the primary means of research. Selinker (1972) first introduced the term "interlanguage" as the language of a second language learner and put forth the idea that it was a language system in its own right. Adjemian (1976) agreed, as did Eckman (1991). Eckman proposed that interlanguages obey certain universal principles that apply to native languages and developed what he termed the Interlanguage Structural Conformity Hypothesis (Eckman, Moravesik, & Wirth, 1989). This hypothesis states that: "The universal generalizations that hold for the primary languages hold also for interlanguages." Researchers began to see parallels between the acquisition of native languages and the acquisition of second languages. As a result, they began recognizing and accepting the importance of L2 data in the development of linguistic theory.

PREVIOUS STUDIES INVOLVING SSP VIOLATIONS IN INTERLANGUAGE

A review of the literature resulted in finding three studies that looked at SSP violations in interlanguages. As will be seen, the results are mixed. It should be noted that in all three studies, unlike the current study, the native language of the L2 speakers has initial consonant clusters.

Tropf (1986) tested 11 adult Spanish speakers on German onset clusters. He found that speakers modified onsets that violate the SSP more than those that do not. Specifically, his speakers had difficulty with /ʃCC/ clusters, where the initial position of the /ʃ/ violates the SSP. They either deleted the /ʃ/ or they epenthesized /ə/ before the cluster. Tropf noted that the /ʃ/ is not a Spanish phoneme and the consonant clusters that remained when the /ʃ/ was deleted are acceptable Spanish clusters. Therefore these modifications to the cluster could be attributed to native language transfer. Although he notes both factors, Tropf does not say whether he believes that the speakers' difficulty was due to the nature of the cluster (i.e., that it violates the SSP) or the influence of their native language.

Carlisle (1991) also looked at SSP violations in the interlanguage clusters of native Spanish speakers. Prior to reporting on his own results however, he offered what he believed to be three problems with Tropf's study: Tropf collected his data from conversations and so did not control the environment in which the clusters were spoken; he didn't distinguish between two-consonant and three consonant clusters; and he did not run a statistical test on the data.

Carlisle tested 11 adult Spanish speakers learning English. He tested their pronunciation of words beginning with the /st/ consonant cluster and the /sl/ consonant cluster. Unlike Tropf he also looked at the variability of the pronunciation of these two clusters in relation to the environment, i.e., How did the last segment of the word immediately preceding the consonant cluster affect the pronunciation? He found that the speakers modified the /st/ clusters more frequently than the /sl/ clusters. He also found that there were more modifications if the preceding segment was a consonant than if it was a vowel. He concluded that the SSP, as well as the environment, were factors in accounting for interlanguage variations.

Major (1996) tested 4 adult Brazilian Portuguese speakers learning English as a second language. Unlike Tropf and Carlisle, he found that the fricative-stop clusters that violate the SSP (st, sp, sk) had *lower* error rates than those that do not (the fricative-liquids or stop-liquids). He suggested that these results could be due to native language transfer in that, although Portuguese does not allow a *#/sC/ cluster, it does have #/is$C/ sequences. In fast speech Portuguese speakers will delete the /i/ resulting in an #/sC/ onset cluster. In addition, he notes that the fricative-liquid clusters in the test were /sl/ and /ʃr/, neither of which occurs in Portuguese. Major offers another explanation for his results by suggesting that the /s/ segment is special in phonology. This idea will be further examined later in this report.

NATIVE LANGUAGES OF THE SPEAKERS FOR THE CURRENT STUDY

As mentioned, the current study involves speakers whose native language does not have initial consonant clusters. The four languages represented are Chinese, Vietnamese, Amharic, and Arabic. A brief description of each is provided:

Chinese: Karlgren (1962) states that as early as 500 A.D. the Chinese language has allowed no more than one consonant at the beginning of the word. The Chinese syllable is composed of the following: (C) (G) V (N or G) + Tone. In this formula
C = Consonant, G = Glide (nonsyllabic vowel), V = Full Vowel, N = Nasal.

Vietnamese: Chaudhary (1983) states that the Vietnamese language does not permit consonant clusters and that the canonical syllable structure is CVC, CVVC or CVVVC. However, Nguyen-Dang-Liem (1967) states that Vietnamese does have consonant clusters consisting only of /Cw/. Anthony Nguyen (personal communication, May 6, 1999) agrees with Chaudhary.

Amharic: According to Leslau (1997) Amharic has no initial consonant clusters although it has final two consonant clusters in verbal forms. The syllable structure of the language is: V, VC, VCC, CV, CVC, and CVCC.

Arabic: Bateson (1967) states that all Arabic syllables must begin with a single consonant. Syllable types are generally CV or CVC.

THE SUBJECTS

Three adult subjects for each language group were selected for the study. The Vietnamese, Amharic, and Chinese students are currently studying English at the Carlos Rosario Charter School in Washington DC. They are in low and intermediate beginning level classes. Two of the Arabic speakers are in the Advanced Beginning (Level 10) class at George Mason University's English Language Institute (ELI). The ages of the subjects range from 18 to 51. The age of onset for learning English ranged from 6 years to 50. All have learned English within an academic environment. Profiles of the 11 subjects whose data were analyzed for this study are found in Appendix A.

THE METHODOLOGY

The subjects were asked to say single syllable English words that have initial two-consonant clusters. The words were presented on 5 X 7 index cards within the carrier phrase "Now I say...". The carrier phrase was used in order to maintain a consistent phonological environment before each word. Each student was presented with three practice words. I explained only that these recordings would help me with a project that I was doing for the class I was taking at the university. I did not explain the nature of the test.

The Carlos Rosario students were recorded in my classroom, after class. The GMU students were recorded in a room at the ELI offices. All students were recorded using a Sony TC-D5M tape recorder with a separate Electro-Voice microphone.

RESULTS AND DISCUSSION

I transcribed the pronunciations of each subject along with Marietta Bradinova, a graduate student from the Masters in Linguistics program at George Mason University, using The International Phonetic Alphabet. Complete transcriptions of each subject's pronunciations are provided in Appendix B. Only modifications to the initial consonant cluster of each word were considered errors since this was the focus of the study. Pronunciations of the English /ɹ/ as

a trilled aveolar were transcribed as /r/ and were not considered an error. Error types fell into three basic categories:

a. - substitution of one segment for another in the cluster (retention of the cluster)
b. - epenthesis before or after the first consonant in the cluster (deletion of the cluster)
c. -other errors that deleted or corrupted the cluster such as deletion of a segment, metathesis, and long hesitations between the two segments of the cluster.

The initial clusters were categorized into three groups: 1) consonant clusters that do not include the segment /s/ and also do not violate the SSP, such as /bl/ and /gr/; 2) consonant clusters that include the segment /s/ but do not violate the SSP, such as /sl/ and /sm/; and 3) consonant clusters that include the segment /s/ and do violate the SSP, which are the clusters /st/, /sp/, and /sk/. Results of the number of errors by cluster type are shown in Table 1.

Statistically there was no difference in error rates for the three groups. Within the first group, (made up of non /s/ clusters) the highest rate of error was in the two clusters with a /k/: the /kl/ and the /kr/ clusters. Sixty-six percent of the errors were a simple matter of changing the voicing, i.e. the subjects substituted a /ý/ for the /k/. This is particularly puzzling as all four languages have word initial /k/. Thus, this high error rate can not be attributed to native language transfer. One possible explanation is that each of the words in these two groups orthographically begin with the letter "c." Phonetically speaking this letter does not represent either of the sounds associated with it, i.e., neither the /k/ nor the /s/ sound. Perhaps this is a source of confusion for students learning English.

Overall, SSP violations did not appear to be a significant factor in the interlanguage of these speakers. However, although there was virtually no contrast between SSP violating clusters and non SSP violating clusters, there was an interesting contrast between the /s/ clusters and the non /s/ clusters. This contrast involves the *type* of errors that were prevalent between the two groups. A summary of error types is presented in Table 2. (The number of errors in Table 2 for groups 1 and 2 is higher than in Table 1 because there were three instances where one error involved two types of modifications to the cluster.)

Table 1
ERRORS BY CLUSTER TYPE

	Cluster Type	No. of Tokens	No. of Errors	% Errors
Non /s/ Clusters				
	/br/	22	4	18.2
	/dr/	22	1	4.5
	/fr/	22	1	4.5
	/gr/	22	1	4.5
	/kr/	22	11	50.0
	/pr/	22	1	4.5
	/bl/	22	3	13.6
	/fl/	22	6	27.3
	/gl/	22	2	9.1
	/kl/	22	10	45.5
	/pl/	22	1	4.5
Total		**242**	**41**	**16.9%**
/s/ Clusters -- No SSP Violation				
	/sl/	44	5	11.4
	/sm/	44	7	15.9
	/sn/	44	6	13.6
	/sw/	44	12	27.3
Total		**176**	**30**	**17.0%**
/s/ Clusters -- SSP Violation				
	/sk/	44	6	13.6
	/sp/	44	12	27.3
	/st/	44	5	11.4
Total		**132**	**23**	**17.4%**

Table 2
TYPES OF ERRORS

Non /s/ Clusters					
Language	**Substitution**	**Epenthesis Before Cl.**	**Epenthesis Between Cl.**	**Other**	**Total**
Vietnamese	18		1		19
Amharic	8				8
Chinese	4		3	1	8
Arabic	5	1	1		7
Total Errors	35	1	5	1	42
Percent	83.30%	2.40%	11.90%	2.40%	

/s/ Clusters – No SSP Violation					
Language	**Substitution**	**Epenthesis Before Cl.**	**Epenthesis Between Cl.**	**Other**	**Total**
Vietnamese	2		13		15
Amharic		7		2	9
Chinese	1				1
Arabic		1	1	5	7
Total Errors	3	8	14	7	32
Percent	9.4%	25.0%	43.6%	21.9%	

/s/ Clusters – SSP Violation					
Language	**Substitution**	**Epenthesis Before Cl.**	**Epenthesis Between Cl.**	**Other**	**Total**
Vietnamese	1		3	2	19
Amharic		10		2	8
Chinese	1		1		8
Arabic				3	7
Total Errors	2	10	4	7	23
Percent	8.7%	43.5%	17.4%	30.4%	

For those clusters that did not include an /s/, 83.3 % of the errors involved substitutions. The target form was not realized; however, the cluster was retained. By comparison, for those clusters with no SSP violation that did include the segment /s/, only 9.4% of the errors involved substitution. The majority of the errors involved some type of modification that corrupted the cluster. Similarly, those clusters that violated the SSP and included an /s/ segment had a substitution error rate of 8.7%. Again, the majority of the errors included a modification that corrupted the cluster.

Even within the substitution errors the modifications were greater in the /s/ clusters than in the non /s/ clusters. Sixty-six percent of the substitution errors for the non /s/ clusters consisted of a simple voicing change. Eighty percent of the substitution errors for the /s/ clusters

Regarding those changes that corrupted the cluster, the majority of the modifications involved epenthesis. The Vietnamese and Chinese speakers epenthesized between the two consonants. The Amharic speakers epenthesized before the first consonant in the cluster. The Arabic speaking students did both, although the number of times that they employed this strategy was small.

Other errors not involving epenthesis but corrupting the cluster involved one occasion of /l/ deletion and three occasions of metathesis. One of the Arabic speaking students had five instances of a significant hesitation between the pronunciation of the /s/ and the following consonant. He also had two occasions where he drew out the pronunciation of the /s/, to the point that it could be considered either a double/s/ or a syllabic /s/. Two of the Amharic students also had instances of a long hesitation between the /s/ and the following consonant or a drawn out pronunciation of the /s/. Table 3 summarizes the errors by language group.

Table 3

Errors by Language Group

Vietnamese							
Type of Cluster		Epenthesis	Epenthesis		Total	Total	
	Substitution	Before Cl.	Between Cl.	Other	Errors	Tokens	% Errors
Non /s/ Clusters	18		1		19	66	28.8%
/s/ Clusters-No Viol.	2	3	10		15	48	31.3%
/s/ Clusters-Violation	1		3	2	6	36	16.6%
Totals	21	3	14	2	40	150	26.7%
Amharic							
Type of Cluster		Epenthesis	Epenthesis		Total	Total	
	Substitution	Before Cl.	Between Cl.	Other	Errors	Tokens	% Errors
Non /s/ Clusters	8				8	66	21.1%
/s/ Clusters-No Viol.		7		2	9	48	18.8%
/s/ Clusters-Violation		10		2	12	36	33.3%
Totals	8	17		4	29	150	19.3%
Chinese							
Type of Cluster		Epenthesis	Epenthesis		Total	Total	
	Substitution	Before Cl.	Between Cl.	Other	Errors	Tokens	% Errors
Non /s/ Clusters	4		3	1	8	66	12.1%
/s/ Clusters-No Viol.	1				1	48	2.1%
/s/ Clusters-Violation	1		1		2	36	5.5%
Totals	6		4	1	11	150	7.3%
Arabic							
Type of Cluster		Epenthesis	Epenthesis		Total	Total	
	Substitution	Before Cl.	Between Cl.	Other	Errors	Tokens	% Errors
Non /s/ Clusters	5	1	1		7	44	15.9%
/s/ Clusters-No Viol.		1	1	5	7	32	21.9%
/s/ Clusters-Violation				3	3	24	12.5%
Totals	5	2	2	8	17	100	17.0%

As the data in Table 3 show, results are mixed when comparing the four language groups. The Chinese speakers had the highest error rate in the non /s/ clusters. The Vietnamese and Arabic speakers had the highest error rate in the /s/ clusters that do not violate the SSP. Only the Amharic speakers had the highest error rate in the /s/ clusters that violate the SSP. Looking at the error rates for the individual speakers the results are also mixed for three of the four language groups. Only the three Chinese speakers had, consistently, the highest error rate in the non /s/ cluster group. A summary of errors by the individual speakers is provided in Appendix C.

By testing speakers whose languages do not include initial consonant clusters the native language is viewed as having a limited influence on the pronunciations of these clusters in the target language. The overall error rates show that the Sonority Sequencing Principle is not a primary factor either, at least not with these data. However, the segment /s/ does appears to play a significant role in the interlanguage of these speakers. Major (1996), in discussing the results of his study (in which his subjects had lower error rates for the consonant clusters that violated the SSP) advised that it is important to look not only at the sonority of a segment but at the specifics of that segment. He noted that in phonology the /s/ is special. He cites Selkirk (1984), who observed that, universally, obstruent plus /s/ sequences have the "peculiar" characteristic of functioning at some level as a single consonant. Major also cites Kaye (1989) who stated that no sequence of /s/ plus consonant can form an onset. That is, the /s/ falls outside the syllable. In offering an explanation as to why the SSP violating clusters had lower error rates in his study, Major suggests that the speakers treated the /s/ as not part of the cluster but as a singleton. Thus it was less marked than the two-consonant clusters.

This view of /s/ complements the idea of extrasyllabicity. As mentioned previously, Clements (1992) states that consonants violating the SSP usually occur at the edges of the syllable where they can plausibly be analyzed as extrasyllabic, i.e., the consonant at the outer edge is itself a syllable and not part of the consonant cluster. Bradinova and Welch (1998) looked at SSP violations in Russian, Polish and Bulgarian. The segment /s/, along with two other fricatives (/z/ and /v/), was the first consonant of the two and three consonant clusters they analyzed. They concluded that these segments were extrasyllabic and not part of the cluster. The remaining segments in the cluster abided by the SSP.

CONCLUSION

The results of this study showed virtually no difference in the overall error rates for the three types of consonant clusters that were presented to the speakers of the four language groups. A significant contrast was found, however, between those clusters with no /s/ and those clusters with an /s/, the difference being in the *types* of errors rather than the number of errors. The speakers' modifications to the /s/ clusters resulted in breaking up the clusters, whereas the modifications to the non /s/ clusters simply changed one of the segments while retaining the cluster. These subjects appear to recognize that the /s/ is "special" and, by epenthesizing, they made it a separate syllable rather than treating it as part of the consonant cluster. This supports the concept of extrasyllabicity as a way to explain supposed violations to the Sonority Sequencing Principle. The extrasyllabic nature of /s/ appears to have been a stronger influence on the interlanguage of the subjects of this study than the Sonority Sequencing Principle and the initial consonant clusters that violate it. This study, along with the mixed results of the previously cited studies, indict that futher research would be valuable to understand the many factors that play a role in the interlanguage of students learning a second language.

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APPENDIX A
SUBJECT PROFILES

Subject 1

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Hue City, Vietnam	Vietnamese	None	48, Female	40	Academic	9 years

Subject 2

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Addis Ababa, Ethiopia	Amharic	None	47, Female	9	Academic	4.5 years

Subject 3

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Hanoi, Vietnam	Vietnamese	None	51, Female	50	Academic	2 years

Subject 4

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Addis Ababa, Ethiopia	Amharic	None	21, Female	11	Academic	1.5 years

Subject 5

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Beijing, China	Chinese	None	35, Female	35	Academic	5 months

Subject 6

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Hanoi, Vietnam	Vietnamese	None	41, Female	40	Academic	3 years

Subject 7

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Addis Ababa, Ethiopia	Amharic	None	20, Female	6	Academic	6 months

Subject 8

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Beijing, China	Chinese	None	46, Female	14	Academic	6 months

Subject 9

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Hunan, China	Chinese	None	50, Female	16	Academic	2 years

Subject 10

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Rial, Saudi Arabia	Arabic	None	18, Male	13	Academic	4 months

Subject 11

Place of Birth	Native Language	Other Second Languages	Age and Sex	Age of English Onset	English Learning Method	Length of Residence
Sanaa, Yemen	Arabic	None	26, Male	21	Academic	6 months

Appendix B
IPA Transcriptions

Bold Type = Clusters that violate the SSP.
* = Error in pronunciation of the initial consonant cluster.
$ = Hesitation

Subject 1 - Vietnamese

	IPA		IPA		IPA
green	[grɪnə]	**skull**	[skʊl]	**stun**	[stʌn]
snit	[snɪt]	plan	[plæn]	prim	[prim]
press	[prɛs]	snack	[snæsk]	sleep	[slip]
spit	[drɪt] *	drop	[drɔpə]	swing	[skwɪn] *
blouse	[blaʊs]	brim	[prɪm] *	glad	[glæd]
slim	[slim]	smack	[smæk]	snot	[snɑt]
class	[glæs] *	slam	[sklæm] *	floss	[glɔs] *
swell	[swɛlə]	flat	[blæt] *	**stop**	[stɔp]
gloss	[glɔ:z]	snake	[snæk]	small	[smɔl]
smile	[smaʊl]	black	[blæk]	plot	[plɔt]
skate	[skɛɪt]	**spot**	[spɔs]	**spam**	[spæm]
crass	[klæs] *	from	[frɔm]	clean	[klin]
sweet	[swɪt]	swat	[skwɔt] *	**step**	[stɛp]
spin	[driŋ] *	brat	[præt] *	fret	[prɛt] *
skin	[skin]	smell	[smɛl]	**skit**	[skɪt]
grape	[grɛp]	crap	[kræp]	slip	[slip]
still	[stɪl]	dress	[drɛs]		

Subject 3 - Vietnamese

	IPA		IPA		IPA
green	[grin]	**skull**	[skɪn]	**stun**	[stɪn]
snit	[snɪt]	plan	[plɛn]	prim	[prɪm]
press	[prɪs]	snack	[snɛk]	sleep	[slɪp]
spit	[spɪt]	drop	[drɔp]	swing	[swɪŋ]
blouse	[blus]	brim	[brɪm]	glad	[glɪb]
slim	[slɪm]	smack	[smɛk]	snot	[snɑt]
class	[glæs] *	slam	[slæm]	floss	[flɔs]
swell	[swit]	flat	[flæt]	**stop**	[stɑp]
gloss	[glɔs]	snake	[sneik]	small	[smaɪl]
smile	[smɪl]	black	[blæk]	plot	[plɑt]
skate	[skɛt]	**spot**	[spɔt]	**spam**	[spæm]
crass	[sræs] *	from	[frɑm]	clean	[klin]
sweet	[swit]	swat	[swɛt]	**step**	[stɛp]
spin	[spɪn]	brat	[brɛt]	fret	[frɛt]
skin	[skɪn]	smell	[svɛn] *	**skit**	[slɪt]
grape	[græpɪ]	crap	[sræp] *	slip	[slip]
still	[stɪn]	dress	[drɛs]		

Subject 6 - Vietnamese

	IPA		IPA		IPA
green	[grɪn]	skull	[səkʊl] *	stun	[stʊn]
snit	[sənɪt] *	plan	[plɛn]	prim	[prɪm]
press	[bliz] *	snack	[sənɛk] *	sleep	[slɪpə]
spit	[spɪt]	drop	[drʊp]	swing	[səwɪŋ] *
blouse	[blous]	brim	[brim]	glad	[glæd]
slim	[slɪm]	smack	[səmʌk] *	snot	[snɑt]
class	[glæs] *	slam	[səlæm] *	floss	[flɔs]
swell	[səwɛl] *	flat	[plæt] *	stop	[stɔp]
gloss	[glouf]	snake	[snɛk]	small	[smɑl]
smile	[gəmɪl] *	black	[blæk]	plot	[plɑt]
skate	[skæt]	spot	[spɔt]	spam	[səpæm] *
crass	[græs] *	from	[frɔm]	clean	[glin] *
sweet	[səwɛt] *	swat	[səwɪt] *	step	[stɛp]
spin	[spɪn]	brat	[bræt]	fret	[frɛt]
skin	[skɪn]	smell	[səmɛl] *	skit	[səkɪt] *
grape	[gəreɪpə] *	crap	[græp] *	slip	[slip]
still	[spil] *	dress	[drɛs]		

Subject 2 - Amharic

	IPA		IPA		IPA
green	[grɪn]	**skull**	[skil]	**stun**	[stɑn]
snit	[sʌn] *	plan	[plo]	prim	[praɪm]
press	[prɪsəs]	snack	[snaɪk]	sleep	[sleip]
spit	[spɑt]	drop	[dro]	swing	[swiŋk]
blouse	[blʊz]	brim	[braɪm]	glad	[glɑd]
slim	[slɑm]	smack	[smaɪk]	snot	[snɑt]
class	[glæsəs] *	slam	[slaɪ]	floss	[flɔsəs]
swell	[swɪl]	flat	[flæt]	**stop**	[stop]
gloss	[glɔsəs]	snake	[snɑk]	small	[smaɪl]
smile	[smɛl]	black	[blɔk]	plot	[plɔt]
skate	[skæt]	**spot**	[spɔt]	**spam**	[spaɪ]
crass	[græsəs] *	from	[frɔm]	clean	[glɛn] *
sweet	[swit]	swat	[swit]	**step**	[stɛp]
spin	[spɛn]	brat	[braɪt]	fret	[fret]
skin	[ʂkʌn] *	smell	[smaɪl]	**skit**	[skɛt]
grape	[grɑp]	crap	[græp] *	slip	[slaɪp]
still	[stɑ]	dress	[drɛsəs]		

Subject 4 - Amharic

	IPA		IPA		IPA
green	[grin]	**skull**	[skʌl]	**stun**	[stʌn]
snit	[snɛt]	plan	[plen]	prim	[praɪm]
press	[prɛsəs]	snack	[snɑk]	sleep	[slip]
spit	[spaɪt]	drop	[drɔp]	swing	[swɛŋ]
blouse	[blɛs]	brim	[braɪm]	glad	[glɑd]
slim	[sleɪm]	smack	[smɔk]	snot	[snɔt]
class	[klæs]	slam	[slɑm]	floss	[flɔsəs]
swell	[swɪl]	flat	[flɑt]	**stop**	[stɔp]
gloss	[glɔsəs]	snake	[snɑk]	small	[smɛl]
smile	[smaɪl]	black	[blæk]	plot	[plɔt]
skate	[sskɑt] *	**spot**	[spɔt]	**spam**	[spɑm]
crass	[krɑs]	from	[frɔm]	clean	[klin]
sweet	[swɪt]	swat	[swit]	**step**	[stɛp]
spin	[spɪn]	brat	[brɑt]	fret	[frit]
skin	[skɪn]	smell	[smɛl]	**skit**	[skɪt]
grape	[greɪp]	crap	[krɑp]	slip	[slip]
still	[stɪl]	dress	[drɛs]		

Subject 7 - Amharic

	IPA		IPA		IPA
green	[gɾɪn]	**skull**	[əskʌl] *	**stun**	[əstʌn] *
snit	[sɛnt] *	plan	[plæn]	prim	[pɹɪm]
press	[pɹɪɛs]	snack	[snæk]	sleep	[əslɛp] *
spit	[əspɛt] *	drop	[drɔp]	swing	[əswɪŋk] *
blouse	[blɔs]	brim	[drim] *	glad	[glæd]
slim	[slæm]	smack	[əsmæk] *	snot	[snɔt]
class	[glæs] *	slam	[əslæm] *	floss	[klɔs] *
swell	[swɛl]	flat	[flæt]	**stop**	[əstɔp] *
gloss	[glɔs]	snake	[snɛk]	small	[əsmaɪl] *
smile	[əsmaɪl] *	black	[blæk]	plot	[plɔt]
skate	[skeɪt]	**spot**	[əspɔt] *	**spam**	[əspɑm] *
crass	[kɹɑs]	from	[fɹɔm]	clean	[klin]
sweet	[əswɪt] *	swat	[swɔt]	**step**	[əstɪp] *
spin	[əspɪn] *	brat	[brɑt]	fret	[fɹɪtz]
skin	[skɑn]	smell	[smaɪl]	**skit**	[əskɪtz] *
grape	[gɹeɪp]	crap	[grɑp] *	slip	[slɪp]
still	[əstə˞] *	dress	[dɹɛs]		

Subject 5 - Chinese

	IPA		IPA		IPA
green	[gɹin]	**skull**	[skʊl]	**stun**	[stju]
snit	[snit]	plan	[plæn]	prim	[pɹim]
press	[pɹɛs]	snack	[snæk]	sleep	[slip]
spit	[spit]	drop	[dɔɹɔp] *	swing	[svɪŋgĩ] *
blouse	[blɔs]	brim	[bɹimə]	glad	[glɛndə]
slim	[slɪm]	smack	[smæk]	snot	[snɔt]
class	[kəlɑs] *	slam	[slæm]	floss	[flɔs]
swell	[swɛl]	flat	[flæt]	**stop**	[stɔp]
gloss	[glovs]	snake	[snɛk]	small	[smɛl]
smile	[smɛl]	black	[blæk]	plot	[plɔt]
skate	[skæt]	**spot**	[spɔt]	**spam**	[spɛm]
crass	[kɛɹɪs] *	from	[fɹɔm]	clean	[klæslə˞]
sweet	[swit]	swat	[swɛtə˞]	**step**	[stɛp]
spin	[spĩ]	brat	[bɹɛtə˞]	fret	[fɹɛt]
skin	[skĩ]	smell	[smɛl]	**skit**	[skɪt]
grape	[gɹɛpɔ]	crap	[kɹæpə]	slip	[slɪp]
still	[stil]	dress	[dɹɛsə˞]		

Subject 8 - Chinese

	IPA		IPA		IPA
green	[gɹin]	**skull**	[skʊl]	**stun**	[stʌn]
snit	[snit]	plan	[plaɪ]	prim	[pɹim]
press	[pɹis]	snack	[sneɪk]	sleep	[slip]
spit	[spit]	drop	[dɹɔp]	swing	[swiŋ]
blouse	[blʊs]	brim	[bɹim]	glad	[glæd]
slim	[slɪm]	smack	[smɑk]	snot	[snɔtʰ]
class	[klæs]	slam	[slim]	floss	[flɑs]
swell	[swɛl]	flat	[plɑt] *	**stop**	[stɑpʰ]
gloss	[glous]	snake	[sneɪk]	small	[smɛl]
smile	[smɛl]	black	[plæk] *	plot	[plɑt]
skate	[skɪt]	**spot**	[spɔt]	**spam**	[səpim] *
crass	[gɹaɪs] *	from	[fɹɔm]	clean	[klin]
sweet	[swit]	swat	[swit]	**step**	[stɛp]
spin	[spin]	brat	[bɹit]	fret	[fɹit]
skin	[skin]	smell	[smɛl]	**skit**	[skit]
grape	[gɹip]	crap	[kɹɑp]	slip	[slip]
still	[stil]	dress	[dɹaɪs]		

Subject 9 - Chinese

	IPA		IPA		IPA
green	[gɹin]	**skull**	[skɪl]	**stun**	[stɔ̃]
snit	[snɪt]	plan	[plæn]	prim	[pɹɪm]
press	[pɹɛs]	snack	[sneɪk]	sleep	[slip]
spit	[spɪt]	drop	[dɹɔp]	swing	[swiŋ]
blouse	[blɔs]	brim	[bɹɪm]	glad	[glæd]
slim	[slɪm]	smack	[smɑk]	snot	[snɔt]
class	[klæs]	slam	[slɑm]	floss	[flɔs]
swell	[swɛl]	flat	[flaɪt]	**stop**	[stɔp]
gloss	[glɑs]	snake	[sneɪk]	small	[smaɪ]
smile	[smaɪl]	black	[bæk] *	plot	[plɔt]
skate	[skeɪt]	**spot**	[stɔp] *	**spam**	[spɛm]
crass	[gɹɑs] *	from	[fɹɔm]	clean	[kɹiən] *
sweet	[swɪt]	swat	[swit]	**step**	[stɛp]
spin	[spɑn	brat	[bɹɪt]	fret	[fɹɪt]
skin	[skɪn]	smell	[smɛl]	**skit**	[skɪt]
grape	[gɹɪp]	crap	[kɹʊp]	slip	[slɪp]
still	[stɪl]	dress	[dɹaɪs]		

Subject 10 - Arabic

	IPA		IPA		IPA
green	[grin]	**skull**	[skɪl]	**stun**	[stɪn]
snit	[ssɛnt] *	plan	[plæn]	prim	[prɛm]
press	[pɹɪs]	snack	[snɛk]	sleep	[slɪp]
spit	[s$paɪt] *	drop	[drɔp]	swing	[sswɪŋk] *
blouse	[blɔs]	brim	[brɪm]	glad	[glæd]
slim	[slɛm]	smack	[smɛk]	snot	[əsnɔt] *
class	[klɔs]	slam	[s$læm] *	floss	[əflɔs] *
swell	[əəsssuls wɛl] *	flat	[flæt]	**stop**	[stɔp]
gloss	[glɔs]	snake	[snɛki]	small	[smɛl]
smile	[smɛl]	black	[blæk]	plot	[plɔt]
skate	[skɛt]	**spot**	[sspɔt] *	**spam**	[spɛm]
crass	[kɹɔs]	from	[fɹɔm]	clean	[ʃɛlɛn] *
sweet	[swit]	swat	[swit]	**step**	[stɔp]
spin	[spɪn]	brat	[brɛt]	fret	[fɹɛt]
skin	[skɪn]	smell	[smɛl]	**skit**	[skɪt]
grape	[gɹɛp]	crap	[kɹɑp]	slip	[slɪp]
still	[stɪl]	dress	[drɛs]		

Subject 11 - Arabic

	IPA		IPA		IPA
green	[grin]	**skull**	[skɔl]	**stun**	[stɔn]
snit	[snɪt]	plan	[plæn]	prim	[prim]
press	[pris]	snack	[snɪk]	sleep	[slip]
spit	[spit]	drop	[drɔp]	swing	[swæŋk]
blouse	[plaʊs] *	brim	[prɛm] *	glad	[klæp] *
slim	[slim]	smack	[smɑk]	snot	[snɔt]
class	[klæs]	slam	[slæm]	floss	[flɔs]
swell	[sʊwɛl] *	flat	[flæt]	**stop**	[stɑp]
gloss	[klɔs] *	snake	[sneɪk]	small	[smaɪl]
smile	[smaɪl]	black	[blæk]	plot	[plɔt]
skate	[skaɪt]	**spot**	[sæspɔt] *	**spam**	[spɑm]
crass	[krɑs]	from	[frɔm]	clean	[klin]
sweet	[swit]	swat	[swɛt]	**step**	[stip]
spin	[spɪn]	brat	[brɑt]	fret	[frit]
skin	[skɪn]	smell	[smaɪl]	**skit**	[skaɪt]
grape	[gɹɑbɪ]	crap	[krɑp]	slip	[slɛp]
still	[stɪl]	dress	[dris]		

Appendix C
Errors by Individual Subjects

Subject 1 - Vietnamese			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	7	22	31.8%
/s/ Cluster-No Violation	3	16	18.8%
/s/ Cluster-SSP Violation	2	12	16.6%
Total	12	50	24.0%
Subject 3 - Vietnamese			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	3	22	13.6%
/s/ Cluster-No Violation	1	16	6.3%
/s/ Cluster-SSP Violation	0	12	0.0%
Total	4	50	8.0%
Subject 6 - Vietnamese			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	7	22	31.8%
/s/ Cluster-No Violation	10	16	62.5%
/s/ Cluster-SSP Violation	4	12	33.3%
Total	21	50	42.0%
Subject 2 - Amharic			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	4	22	18.2.%
/s/ Cluster-No Violation	1	16	6.3%
/s/ Cluster-SSP Violation	1	12	8.3.%
Total	6	50	12.0%
Subject 4 - Amharic			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	0	22	0.0%
/s/ Cluster-No Violation	0	16	0.0%
/s/ Cluster-SSP Violation	1	12	8.3%
Total	1	50	2.0%
Subject 7 - Amharic			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	4	22	18.2%
/s/ Cluster-No Violation	8	16	50.0%
/s/ Cluster-SSP Violation	10	12	83.3%
Total	22	50	44.0%

Appendix C (cont.)

Subject 5 - Chinese			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	3	22	13.6%
/s/ Cluster-No Violation	1	16	6.3%
/s/ Cluster-SSP Violation	0	12	0.0%
Total	4	50	8.0%
Subject 8 - Chinese			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	3	22	13.6%
/s/ Cluster-No Violation	0	16	0.0%
/s/ Cluster-SSP Violation	1	12	8.3%
Total	4	50	8.0%
Subject 9 - Chinese			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	3	22	13.6%
/s/ Cluster-No Violation	0	16	0.0%
/s/ Cluster-SSP Violation	1	12	8.3%
Total	4	50	8.0%
Subject 10 - Arabic			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	2	22	9.1%
/s/ Cluster-No Violation	5	16	31.3%
/s/ Cluster-SSP Violation	2	12	16.7%
Total	9	50	18.0%
Subject 11 - Arabic			
Type of Cluster	No. of Errors	No. of Tokens	Percent Errors
Non /s/ Cluster	4	22	18.8%
/s/ Cluster-No Violation	1	16	6.3%
/s/ Cluster-SSP Violation	1	12	8.3%
Total	6	50	12.0%

UNIVERSAL GRAMMAR AND LANGUAGE PEDAGOGY HAS SLA RESEARCH LINKED THEORY AND PRACTICE?

John Alphin

This paper will explore a potential interface between linguistic theory, second language acquisition (SLA) research, and pedagogical practice. Flynn and Martohardjono (1995) make a case for a theory driven pedagogy and cite universal grammar (UG) as a potential area of focus. Although acknowledging that previous attempts to link UG theory with pedagogy were not successful, Flynn and Martohardjono argue that the continuing development of UG theory presents renewed possibilities for fruitful links between theory and practice. It is hypothesized that in cases where a parametric value in L1 and L2 differ, the new value in L2 must in some sense be "learned". The nature of this "learning" may have pedagogical implications. While Flynn and Martohardjono focus on what must be learned, Larsen-Freeman (1995) cites research suggesting that L2 input containing one aspect of a cluster of properties associated with a parameter might be sufficient to trigger all other aspects of the parameter. Consequently, the learner would "learn" more than what was taught.

The goal of this paper is to answer a straightforward question. Are Flynn and Martohardjono (1995) correct? Does the UG theory of parameters provide a relevant link between SLA theory and pedagogical practice? To answer this question, I reviewed a sample of the SLA literature published in the 1990-1999 time frame. The intent of the review was to focus on relatively recent data. The 1990 cut off was arbitrarily chosen in order to limit the scope of the project. Ten studies were reviewed. Although certainly not exhaustive of the published literature, the claim is made that they provide sufficient data upon which to make an informed judgement on the question at issue. The purpose of the review was neither to critique the methodologies nor to determine if the published data supported the authors' conclusions. Although there appeared to be ample grounds for either of these endeavors, they were beyond the scope of this paper. My methodology was to accept the authors' conclusions as stated. Then, taken as a whole, to assess the implications of this data with respect to the potential utility of UG/SLA theory to ESL pedagogy. Additionally, I reviewed the pedagogical literature to determine if there were articles addressing potential links between UG and pedagogical practice.

The paper will begin with a simplified summary of UG theory that will provide a basis for the review of the published data. Of the 10 SLA studies reviewed, five will be briefly summarized. They were selected to provide an indication of the range of published findings related to UG and SLA. The results of the remaining studies will simply be tabulated. The data from the 10 studies will then be summarized and a conclusion presented related to the potential links between UG/SLA theory and pedagogical practice. Finally, any relevant data from the review of pedagogical literature will be presented.

Cook and Newson (1996) provide an overview of Chomsky's theory of Universal Grammar. Essentially, UG is a theory of knowledge. It is concerned with the internal structure of the human mind and not with behavior. The details of UG theory have developed and continue to be refined, but the term 'principles and parameters' focuses on UG's central claim that linguistic competence consists of principles universal to all languages and parameters that vary from one language to another. Parameters account for the variation among languages and are central to this discussion.

The concept of 'head' parameter can be used to illustrate the role of parameters in UG. Sentences are constructed of phrases and phrases consist of a head and other elements called complements. The head of a phrase can occur on the left of the complements or on their right. Cook and Newson (1996) provide examples to contrast the difference between English that is 'head-left' and Japanese that is 'head-right'.

English: Noun phrase: "education for life"
The head 'education' appears to the left of the complements 'for life'.

Japanese: E wa kabe ni kakatte imasu.
(picture wall on is hanging)
The picture is hanging on the wall.

The head verb kakatte imasu occurs to the right of the verb complement kabe ni and the postposition ni (on) comes on the right of the PP complement kabe. (Cook and Newson 1996, p. 14)

These examples illustrate that there are two possibilities for the structure of phrases in human languages: head-left or head-right. This is the "head" parameter. In the UG theory of L1 acquisition, input from the ambient language, termed primary linguistic data (PLD), is sufficient to trigger the setting of parameters that define the specific characteristics of a language. Therefore, exposure to the Japanese language is all that is required in order for the "head parameter" to be set to "head-right" in the mind of a child. Likewise, a child raised in an English speaking environment would have the "head parameter" set to "head-left". Explicit information about ungrammatical syntactic structures is termed negative data (ND) in UG theory. ND is said to play no role in setting parameters in L1 acquisition.

Is this also the case in L2 acquisition? What occurs when a Japanese speaker attempts to learn English? Does the "head parameter" get reset from "head-right" to "head-left"? If so, what type of input is required in order to trigger the resetting of a parameter? Essentially, these are the types of questions that the studies reviewed in this paper attempted to answer.

Schwartz (1993) addresses the roles of PLD and ND in L2 acquisition. She hypothesizes two distinctions between linguistic knowledge and linguistic behavior. Linguistic knowledge derived from UG is termed competence. Performance is defined as behavior based on competence. Linguistic knowledge based on other cognitive systems is termed learned linguistic knowledge (LLK) and the behavior based on this knowledge is termed learned linguistic behavior (LLB). Schwartz states that language input can be dealt with solely by a language module in the mind. Processing language input is the only function that the language module performs. Schwartz proposes that only PLD can feed the language module. She states that information encapsulation blocks propositional knowledge from entering the language module. Propositional knowledge is defined as knowledge derived from ND and other explicit data consisting of information about the language. Her conclusion is that PLD alone can trigger UG. However, it is hypothesized that ND and explicit data about the language can create LLK, and LLK can influence learned linguistic behavior.

Given these conclusions, what if any are the practical applications for the ESL teacher. In short, only PLD can set the parameters that determine linguistic competence however, linguistic behavior is also influenced by LLK that can be driven by ND and explicit data. The relative influence of each type of data in relation to observable behavior remains to be determined. The practical application of these conclusions seems unclear.

Felix and Weigl (1991) investigated the effects of formal classroom instruction on SLA. Their initial position was that current data made it difficult to support either of the "extreme" (p.163) views: a) L2 learners have no access to UG whatsoever or that; b) UG information controls both L1 and L2 learning in essentially the same way. Their position was that L2 learners do have access to UG, but this access is only partial, imperfect, or blocked in ways, and by factors that are unclear. The barriers to access were assumed to be either biological or environmental. The biological barrier would relate to some difference in the properties of the mind between child L1 learners and adult L2 learners. Environmental factors would relate to the particular situational conditions under which a second language is acquired.

Felix and Weigl (1991) attempted to assess the relationship between the learning situation and UG access. Their methodology was to look at a situation in which L2 learning was solely by formal instruction in a classroom environment. Specifically, the L2 learners were 77 German high school students divided into three groups classified as beginning, intermediate and advanced learners. The teachers were nonnative English speakers and none of the students had ever spent time in an English speaking country. Their task was to correctly judge the grammaticality contrasts in a set of L2 sentences. The authors state that the results of the test were a "disaster". (p.168)

The students did not demonstrate any access to UG. The data indicated that the errors were not random but systematic. The grammaticality judgements of the students seemed to be based on the corresponding structure in German. Additionally, there seemed to be "reverse" development. As students progressed from the beginning to the advanced level, they became less accurate in identifying grammatically "correct" sentences. The authors hypothesized that as the students progressed, they became conservative about judging anything grammatical that had not been explicitly taught.

Felix & Weigl (1991) end the study with these words. "The bad news is for language teachers and language pedagogy. Language teaching – at least in its conventional form – seems to systematically block access to UG and therefore tends to prevent rather than further the acquisition process in domains that go beyond the more accidental and superficial properties of language. The sad conclusion may be this: you really can't learn a language successfully in the classroom." (p.178)

The potential utility of this information to a classroom teacher is difficult to discern.

Uziel (1993) examined the hypothesis that UG is fully available to adult L2 learners. The study involved a group of Hebrew L1 and Italian L1 learners of English. The prediction was that in cases where Hebrew and Italian had the same setting on a parameter, the learners would exhibit similar results in L2 acquisition. Additionally, Uziel predicted that in cases where there was a parametric difference in the L1 and L2 settings, the L2 construction would be more difficult for the L2 learner to acquire. Uziel determined that the results of the study supported these hypotheses and consequently supported the proposition that L2 learners have full access to UG.

For the ESL teacher, the conclusion that UG is fully available to adult L2 learners could suggest that an emphasis on setting parameters is a valid focus for ESL instruction.

Clahsen and Hong (1995) conducted a study that was of particular interest. They specifically investigated the theory of clustering associated with the setting of parameters in L2 acquisition. Another factor that made the study of interest was the methodology utilized. The majority of the studies reviewed for this paper were based on some form of grammaticality judgement by the L2 learner. This study was based on reaction times in a same/different

matching task. Two sentences were flashed on a computer screen. The subjects were instructed to indicate as quickly as possible if the sentences were the same or different.

In this type of matching task, subjects exhibit shorter reaction times when matching grammatical sentences than they do when matching ungrammatical sentences. The theory is that the grammatical sentences have structure and therefore can be mentally processed as a "chunk". However, the ungrammatical sentences do not have structure and must be analyzed as individual elements consequently taking longer to process. This logic is used to determine what syntactic structures are processed as grammatical in an individual's mind. Theoretically, a reaction time test can determine what parameter settings have become a part of an individual's linguistic competence. Clahsen and Hong (1995) investigated subject-verb agreement and null subjects in German. The subjects were 33 adult Korean learners of L2 German. They were not asked to make explicit judgements about grammaticality, but simply to judge if two sentences were the same or different. An analysis of the reaction times was then used to determine if the subjects perceived the sentences to be grammatical.

The authors concluded that their results supported the weak UG view in which UG processes such as parameter setting are not at work in L2 development. In the article, Clahsen and Hong (1995) also assessed a study by Vainikka and Young-Scholten (1994) that concluded that subject-verb agreement and non pro-drop in adult L2 learners developmentally coincides in the same way that it does in child L1 learners. From this Vainikka and Young-Scholten concluded that UG parameters are fully accessible to adult L2 learners. Clahsen and Hong conducted their own analysis of the Vainikka and Young-Scholten data and determined that in fact it was not compelling in supporting a conclusion that UG is accessible in adult L2 acquisition.

In summary, Clahsen and Hong (1995) conclude that their data indicates that the UG process of parameter setting does not play a role in L2 acquisition, and they also find the Vainikka and Young-Scholten(1994) data to be less than compelling in supporting a conclusion that parameter resetting plays a role in L2 acquisition.

For the ESL teacher, these finding would simply rule out the possibility of utilizing parameter setting in the classroom.

Davies (1996) examined the null subject parameter and the associated morphological uniformity hypothesis (MUH). Under the MUH, the recognition of nonuniform verb agreement morphology is necessary and sufficient for determining that null subjects are banned. Davies determined that his data was not consistent with predictions based on the MUH. Consequently, it followed that the MUH was not valid and should be abandoned as part of UG. This conclusion would necessitate a reformulation of the Null Subject Parameter.

For the ESL teacher attempting to utilize parameter theory, these findings simply add another variable. Even if UG is accessible in L2 acquisition, the definitions of the parameters that account for the acquisition are not well defined. The findings of the other studies reviewed for this paper are tabulated below.

White (1991)

a. L1 French learners of English initially assumed the L1 parameter setting for the verb-raising parameter. PLD alone did not result in a total resetting of this parameter to L2 values.
b. ND appeared to assist in the learning process, but the effect was short lived.
c. The data contained no evidence that resetting one of a cluster of properties associated with a parameter would trigger the resetting of the other properties.

d. White, L. (1992) responded to a critique of these findings by Schwartz and Gubala-Ryzak (1992). White concluded that the negative data probably did not engage the UG. However, White stated that this does not mean that ND can never engage UG in L2 acquisition.

Trahey and White (1993)

a. A "flood" (p.195) of L2 PLD did not totally preempt the L1 parameter settings in the L2 learners.
b. Competing parameter settings may coexist in the interlanguage of L2 learners.

White (1995)

a. An experiment to compare the results of explicit instruction and PLD was characterized by the author as "rather discouraging".(p.74) The treatments had no effect either positive or negative.

Hulk (1991)

a. The data supports the theory of resetting parameters as one function of L2 acquisition.
b. Cases in which the L2 parameter is a subset of the L1 parameter are slow to change.
c. L2 learners appear to adopt grammars that have parameter settings that do not correspond to either L1 or L2, but which are possible within the constraints of UG.

Hawkins, Towell, and Bazergui (1993)

a. Certain aspects of UG in second language grammars may be highly resistant to revision from the L1 settings.

What can be concluded from these studies? Selected data can be cited to support any of the following statements. UG may or may not be engaged in L2 acquisition. PLD may or may not be sufficient to reset L1 parameters. Negative data may or may not engage UG. Some parameters may be highly resistant to change by either PLD or ND. Resetting one of a cluster of properties associated with a parameter may or may not trigger the resetting of other properties associated with that parameter. The definition of the properties associated with parameters may or may not be accurate. The resetting of parameters may or may not be possible in a classroom setting.

The goal of this paper was to answer the following question. Are Flynn and Martohardjono (1995) correct? Does parameter setting provide a relevant link between UG theory and pedagogical practice? My conclusion is clear and unequivocal. Flynn and Martohardjono are quite simply wrong.

In addition to the data presented in this paper, support for this position comes from several sources. First, pedagogical literature is virtually silent on the topic of links between UG and pedagogical practice. Second, Cook (1996) authored both a text on UG and a text on second language teaching. In the text on teaching, Cook specifically cautions against using UG theory to draw conclusions about anything other than the core areas of syntax. Cook asserts that UG has little to say about classroom teaching. Finally, Ellis (1997) in addressing the topic of SLA research and language pedagogy directly challenged the conclusions of Flynn and Martohardjono (1995). In his opinion, the Flynn and Martohardjono position would require enormous "leaps of logic." (p.74) Ellis concluded that UG based SLA research has little to offer language pedagogy. Ellis is correct.

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THE SYSTEMATIC REDUCTION OF ENGLISH SYLLABLE FINAL CONSONANTS IN VIETNAMESE-ENGLISH INTERLANGUAGE

Anthony Nguyen

INTRODUCTION

An interlanguage (IL) is generally viewed as a dynamic and complex linguistic system created by an adult learner in acquiring a second language (L2). Being dynamic, it changes constantly as the learner progresses through a theoretically infinite number of states of grammatical development along a continuum (O'Grady 1991). Being complex, it contains many elements, which may come from either the native language (NL) or the target language (TL), or from neither (Altenberg & Vago 1987, Beebe 1987, Gass & Selinker 1994). In spite of a lack of agreement among second language acquisition (SLA) researchers on what exactly those complex components might be, there is a general assumption that the learner creates the IL by constructing and modifying a simplified version of the second language in question, based upon his/her current and cumulative linguistic knowledge (Major 1987a, Klein 1991). In a class experiment, 22 students in the SLA Course at George Mason University (LING582) were asked, after listening to a short taped English speech by several speakers, to judge whether or not the speaker is a native speaker of English, and if not, to identify the possible linguistic background of the speaker. All the students were able to not only ascertain that one speaker is a non-native, but also pinpoint her first language (L1) as Vietnamese (VN), with unanimous agreement. The short speech produced by this speaker must have revealed some interesting cues peculiar to the productions of English words that surfaced from her internalized linguistic system. One of the most telling cues, among many others, was the reduction/deletion of syllable final consonant clusters in English words, as attested by Osburne (1996) in her investigation on the subject:

> "Vietnamese has been chosen as the L1 because cluster reduction and related processes among Vietnamese L1 learners of English are so well attested that they have become a staple of interlanguage phonological theory."

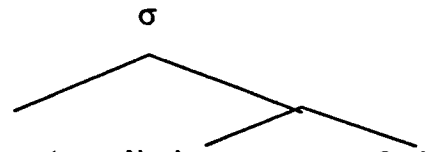
As researchers in SLA strive to account for both the systematicity and the variability in the development of an interlanguage, most studies have focused on syllable final consonant clusters (SF CCs) rather than syllable initial consonant clusters (SI CCs) because the former are more troublesome to L2 learners, i.e., are more "marked" than the latter (Eckman & Iverson 1994, Carlisle 1994). Specifically for the Vietnamese-English IL, several studies had focused on the investigation of the SF CC reduction as evidence of a universal preference for an open syllable structure as proposed by Tarone (1980). Among those, the studies conducted on L1 VN learners by Sato (1984), Benson (1988), Osburne (1996), and Nguyen & Brouha (1998) provided interesting results. In this paper, I will investigate the systematicity in the reduction of English final consonant clusters, as constructed by the L1 Vietnamese Subjects (Ss) from these four studies. Instead of providing a general analysis of all aspects relevant to SLA offered by the data from these studies - those aspects are so many to be accounted for in this short paper - I will rather attempt to identify the common thread that underlies the Ss' performances by focussing on the strategies they used. The purpose of this investigation is an attempt to answer the very basic question: "Can one systematically predict the mechanism underlying the final consonant cluster reduction in L1 VN learners?" It is my hope that, armed with a mechanism that can predict the strategies utilized by L1 VN learners, L2 teachers will be able to devise effective ways to help these learners reduce the foreign accent in their English speech.

VIETNAMESE

Vietnamese is a monosyllabic language in which each syllable is equivalent to a word, and, as such "there are no phonemic words containing more than one phonemic syllable" (Nguyen 1967). A syllable has at least a vowel and a tone, accompanied by a relative stress and an intonation. In spoken language, syllables vary in length with the degree of relative stress assigned to them: the heavier the stress the longer the syllable. Syllables with the same relative stress are approximately equal in length, that is, those containing a vowel cluster - either diphthong or triphthong - would take approximately the same time as those containing a single vowel (Thompson 1965). Phonologically, the language allows no consonant clusters, either initially or finally. Thus, the general template for a syllable (or a word) is:

(C) $V_{1/2/3}$ (C)
where
(C) = optional single consonant
V_1 = single vowel
V_2 = diphthong
V_3 = triphthong

A first major difference between English and VN morphologies resides in the internal structure of the VN syllable. Specifically, a coda in VN can be either a vowel or a consonant as opposed to a coda in English, that can only be a consonant. The following diagram illustrates the difference.



	Onset	Nucleus	Coda		Gloss	Template
(a)	l	a			scream	C V_1
(b)	l	a	n		orchid	C V_1C
(c)	l	á	t		slice	C V_1C
(d)	l	a	i		hybrid	C V_2
(e)	l	a	u		wash	C V_2
(f)	l	u'	o'	i	net	C V_3

Note that the codas in (d), (e), and (f) are vowels. This is a preferable way to look at these vowels as codas, based on the fact that VN does not allow derivation or inflection as English does. However, in speech, these vocalic codas will combine with their corresponding nuclei to be realized as dighthongs or triphthongs. Thus, diphthongs or triphthongs formed in this way will not allow any consonant (C) to follow. This characteristic will have an important effect on the Ss' English productions as will be shown later. A second major difference between the two languages is that VN morphology is primarily tonal, as opposed to the derivational morphology in English. This means that the high productivity of VN words is achieved by adding one of the five tones to a "root" word to generate new ones. As an example, the addition of the high rising

tone / ˊ / to "la" (scream) will give "lá" (leaf); similarly, the addition of the broken tone / ˜ / to it will produce "lã" (pure water). Once again, after a word receives a tone, it becomes fixed, i.e., invariable, and does not accept either derivational or inflectional forms. Table 1, reproduced from Nguyen & Brouha, lists the Vietnamese consonants that are allowed both word-initially and word-finally.

Table 1. Vietnamese Consonantal System (as compared to English Consonantal System)

EXISTING CONSONANTAL SOUNDS IN VIETNAMESE		
WORD-INITIALLY		**WORD-FINALLY**
t k b d g f s v z m n ŋ l ɹ		p t k m n ŋ

Notes:
(1) Only the consonants that are comparable to the English system are given here. There exist other consonants in Vietnamese, such as: c, x, ɣ,ɲ, ... but they are irrelevant to the discussion in this paper. For a complete inventory of the VN sounds, see Nguyen (1967) or Thompson (1965).
(2) The glides /w/ and /j/, considered semivowels, are not included in the table.
(3) The English obstruents that do not exist in VN are: θ, ʃ, tʃ, ð, ʒ, and dʒ.

SUBJECTS

SLA researchers seem to agree that interlanguages exhibit more variability than do natural languages (Gass & Selinker 1994). In fact, in addition to the internal linguistic context that causes variations in the second language learner's system (Tarone 1983), external social and contextual factors affect the learner's performance and productions as well. For example, it has been widely observed that L2 speech performance covaries with the type of discourse activity, and that a discoursal fluency seems to be linked to a phonological proficiency in L2 speech (Leather & James 1996). Tarone (1983), for instance, advocates for the necessity of collecting data from as many styles as possible in order to obtain accurate IL data, since the second language learner's system is a changing one. It is precisely this complex variability of an IL that motivates the selection of these four studies: to obtain an agglomerated corpus of data that can cover as wide a spectrum of variants as possible. See Table 2 below for a profile summary of all Ss.

Table 2. Summary of Subjects profiles

Author	Age	Sex	NL Dialect	Age starting ENGL	Years in USA	ENGLISH level
SATO (1984)	11	M	?	10	1	4th grade
	13	M	?	12	1	6th grade
BENSON (1988)	26	M	C (note 1)	?	5	College graduate
	16	M	S	?	4	11th grade
NGUYEN&BROUHA	29	F	S	25	2	Intermediate
(1998)	27	F	S	12	1	Intermediate
	29	F	S	12	1	Intermediate
	29	F	S	12	2	Intermediate
	28	M	S	22	6	Intermediate
	24	F	S	22	2	Intermediate
	26	M	C	12	5	Intermediate
	45	M	N	12	8	Intermediate
OSBURNE (1996) (note 2)	@ 33 @ 39	M	N	14	13 19	Extremely advanced

Notes:

(1) C= Central (e.g., Hue); N= Northern (e.g., Hanoi); and S= Southern (e.g., Saigon). There is a notable difference in the final realization of some consonants between the Central and Southern dialects on the one hand, and the Northern dialect on the other hand. For example, the final /-t/ is realized as /-k/ by Centrals and Southerners (e.g., "mát" (cool) => /mak/) as opposed to the normal /-t/ by Northerners.

(2) Data from Osburne's only subject were taken at two different times, 6 years apart in a longitudinal study.

Therefore, the entire corpus of data obtained in these studies can indeed be considered a sample representation of many key variability factors that could play important roles in the L2 data: age (from 10 to 45), sex (both male and female), years of English acquisition (from 1 to 19), L2 proficiency level (from low beginning to very advanced), discourse type (from most formal to most casual), task type (from simple repetition, to reading, to free speech), and study type (both longitudinal and cross-sectional).

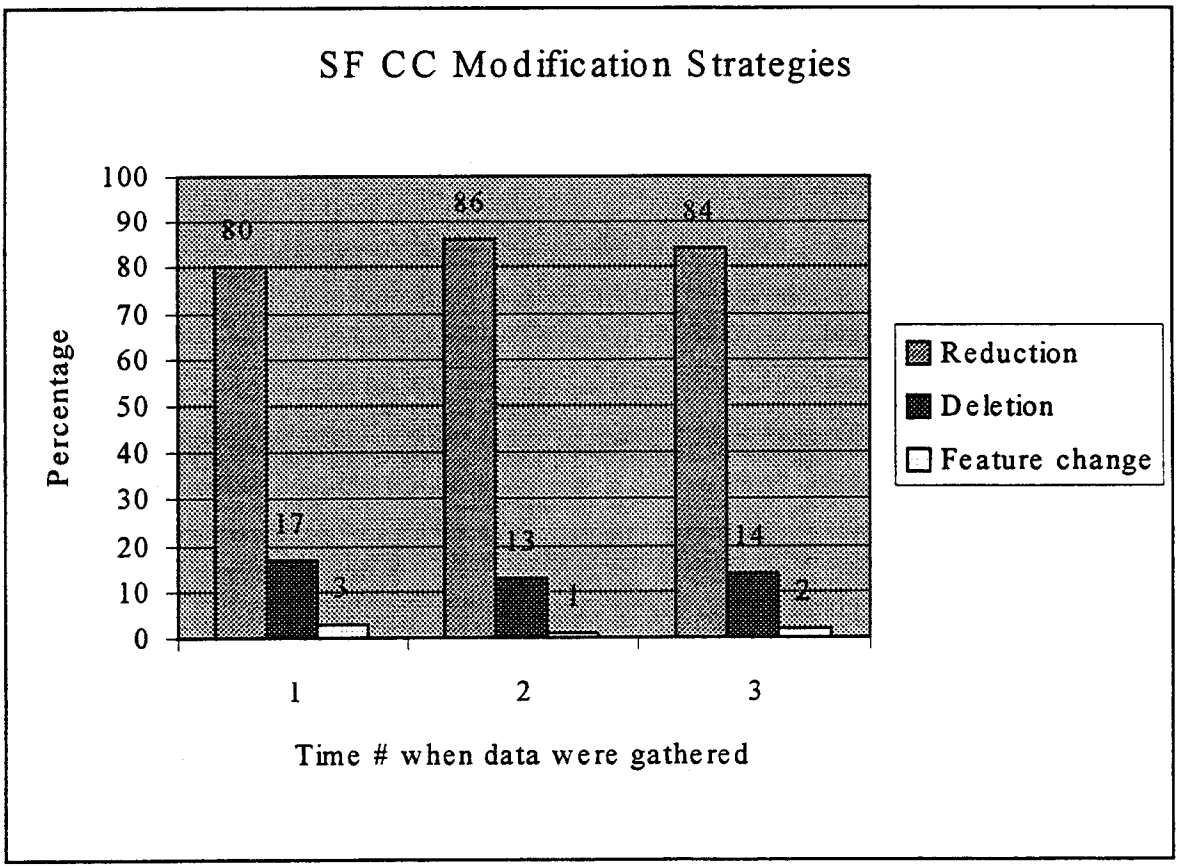
ANALYSIS

I. Sato (1984). The primary purpose of Sato's paper was to find out whether there is enough evidence to support Tarone's (1980) claim of a universal preference for the CV syllable in the IL. Her data were elicited from a longitudinal study of two young VN brothers who started learning English at ages 10 and 12, respectively, in the informal settings of spontaneous conversational speech. Sato classified three types of errors in their SF CC modification strategies in Table 3 where the averages for both Ss' performances are given. The accompanying bar charts show a consistency in the types of errors for all the 3 times the data were gathered: cluster reduction was the highest, next came cluster deletion, and feature change was the lowest. Her conclusions included the following:

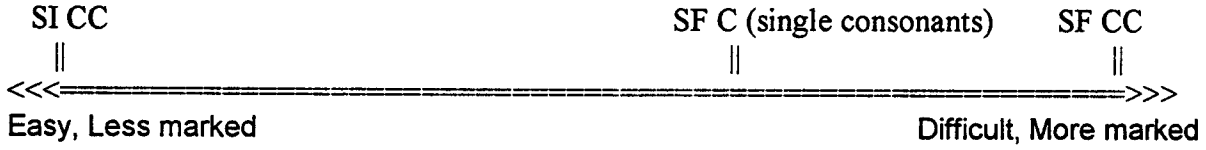
a. There was very little evidence to support a CV structure, thus disconfirmed Tarone's hypothesis on a universal preference for it.
b. More importantly, Sato's data confirmed Eckman's (1977) typological markedness by showing that SF CCs are more difficult for L2 learners than SI CCs, because they are more marked. As for a preference among various strategies used by the Ss, Sato observed that "cluster reduction by one segment was favored over other processes: cluster deletion, vowel epenthesis, and feature change."

Table 3. Syllable-Final Cluster Modification: Average for both Ss
(Data obtained from Sato's Tables 14.5 and 14.10)

Process	Time 1 Error Percentage	Time 2 Error Percentage	Time 3 Error Percentage
Feature change	3	1	2
Cluster reduction	80	86	84
Cluster deletion	17	13	14
Total	100	100	100



Thus, based upon Eckman's Markedness Differential Hypothesis to interpret the findings in Sato (1984) (together with findings from Eckman & Iverson (1994), and Carlisle (1994)), a scale for consonant cluster difficulties can be established as follows:



Sato's findings, therefore, provide evidence for Strategy # 1 in the VN final cluster reduction process, to be formulated as:

Strategy # 1: For SF CCs, prefer reduction over deletion.

II. Benson (1988). Similar to Sato, Benson focused her study on the informal speech of two VN learners to find out whether there is evidence to support a universal preference for the CV syllable structure in IL phonology. Her test words, restricted to both monosyllabic English words and final Cs that also exist in the NL, contained both structure types: CV and CVC. Her findings provided only limited support for the CV (12% of the errors was considered evidence in favor of CV, whereas 87% was considered due to NL transfer). Most important, however, was her investigation on the reason why the Ss deleted the final Cs based on the NL facts. She discovered a consistency in the quality of the "vowels" that triggered the deletion of the Cs that follow them. These are all the diphthongs that, in the NL, do not allow a C to follow: /aɪ/, /oɪ/, and /aʊ/. Predictably then, the Ss would most likely delete the Cs that come after the sounds / aɪ/, /oɪ/, and /aʊ/ in English words. And that was exactly what they did. She thus concluded that the NL influence was obvious in her Ss' strategies. Table 4, reproduced from her Tables 3a and 3b, provides a summary on the Ss' errors.

Table 4. Summary of Errors in Benson's Subjects
(Data obtained from Benson's Tables 3a & 3b.
The symbol /ɪ/ used in Benson's tables is equivalent to the symbol / ɪ / in the text)

SUBJECT 1: PH		**SUBJECT 2: TS**	
English gloss	IL sequence	English gloss	IL sequence
time	t^haɪ, taɪ	M	
down	daʊ	time	t^haɪ
mine	maɪ	join	dʒoi
late	le(ɪ)	mean	mi
night	naɪ	down	daʊ
not	na	eight	eɪ
that	ðæ	not	na
eight	e(ɪ)	that	ðæ
hate	he(ɪ)	what	wʌ
gate	ge(ɪ)	yet	jɛ
out	aʊ	right	raɪ
right	raɪ	write	
like	laɪ	like	laɪ
		talk	t^hɔ

It is also worth noting that, in a previous study, Benson (1986) provided evidence to support the Markedness Differential Hypothesis proposed by Eckman (1977), in which she established that since VN does not allow CCs at all, all types of English clusters, either word-initially or word-finally, are to be considered marked with respect to the NL, and thus become difficult for VN learners and are susceptible to deletion/reduction. She claimed, as a result, that the patterns of deletion/reduction can be predicted from the NL fact as described above. This leads us to:

Strategy # 2: Delete any C after the diphthongs that end with the sounds / -ɪ/ or / -ʊ/.

III. Nguyen & Brouha (1998). In a study of word-final consonant production in English by L1 VN speakers, Nguyen & Brouha tested 8 Ss on 2 groups of sounds. Sounds in group I (θ, ð, ʃ, tʃ, ʒ, dʒ) do not exist in the NL, whereas sounds in group II (b, d, g, f, v, s, z, l, ɹ) do exist in the NL, but only word-initially. All English words tested were CVC and given in three different tasks (repetition, reading, and carrier phrase). Since this was a study specifically designed to investigate the IL realizations of single final consonants in English, no strategy could be directly inferred with respect to final consonant cluster reduction; however, interesting results can be drawn from single consonant deletion or substitution strategies, as a subset of cluster reduction strategies. Patterns of deletions and substitutions of single consonants are given in Table 5. Results from the data are summarized below:

Table 5. Final Consonant Deletions/Substitutions in Nguyen & Brouha's Subjects

Consonant deleted	# of times	%		Consonant substituted	Consonant substituting	# of times
l	24	28		ʃ	s	22
z	11	12		ʒ	s	18
s	10	11		ð	s	6
r,g, ʒ	7	8		θ	s	6
v, ð, dʒ	4	5		tʃ	s	4
θ	3	4		dʒ	s	2
b, tʃ	2	3				
ʃ	0	0				
Total	90	100				

Of a total of 1074 tokens, there were 500 targets and 791 errors. Among the errors, 6% was due to epenthesis, and 11% to deletion, i.e., a total of 17% in favor of the CV syllable structure. From Table 5 above, two obvious questions to be asked are:

1. Why /l/ /z/ /s/ are the most frequently deleted?
2. Why /s/ has become the "substituting agent" for all the sounds that do not exist in the NL?

First, a close examination of the consonants being deleted shows a considerable impact of the NL influence on these Ss' productions, because on the one hand, none of the final Cs that are allowed in the NL (p, t, k, m, n, ŋ) was deleted, and on the other hand, all of the final Cs that were deleted are either permitted only initially, or not permitted at all, as described in Table 2.

For question #1, it seems there is a NL mechanism that triggers the deletion of the final /l/. An analysis of several VN borrowings (see Nguyen, 1986, and Le & Le, 1980), both from

English and French words that end with /l/, gathered in Table 6 below shows the borrowed words had been restructured according to these two nativization rules:

Rule (1): ____l ==> ____n (variant ñ)
Rule (2): ____l ==> ∅

Table 6. Some Vietnamese Loan Words

English		IPA	Vietnamese	IPA	Rule
ball		[bɔ:l]	ban/banh	[ban/bañ]	(1)
film		[film]	phim	[fim]	(2)
valve		[vælv]	van	[van]	(1)
French	**Gloss**	**IPA**	**Vietnamese**	**IPA**	**Rule**
napalm	*napalm*	[næpalm]	na-pan	[napan]	(1)
filtre	*filter*	[filtr]	phin	[fin]	(1)
pile	*battery*	[pil]	pin	[pin]	(1)

According to Major (1987b), "loan words have been changed so that they fit native patterns," these examples indicate that there must be an underlying mechanism in the NL that triggers the restructuring of these loan words, and that these restructuring rules have transpired from the NL into the IL. This discovery seems interesting, but further investigation is beyond the scope of this study. For an overall picture of the final /l/ production in Nguyen & Brouha, out of 72 tokens, there were 32 targets (= 44.5%), 24 deletions (= 33.4% for Rule (2)), 14 substitutions by /n/ (= 19.5% for Rule (1)), and 2 others (= 2.6%).

As for the deletions of /r/, /z/, /s/, etc.., the answer may also lie in the NL facts. Since there seemed to be no considerable ambiguity involved (Weinberger 1987), the Ss just simply dropped these "difficult" sounds due to NL fossilization, as pointed out by Edwards (1997) who, for example, describes /r/ as posing "genuine difficulties for the non-native speaker, almost without exception." Therefore, these sounds, in addition to their position in the codas (which is not allowed in the NL) must be considered the last to be mastered developmentally and traditionally present L2 pronunciation difficulties.

For question #2, a transfer hypothesis would predict that the Ss would delete all these consonants in the TL words, because they do not exist in the NL. It was not so. The Ss used another strategy. They showed constraints against ambiguity by preserving structure (Weinberger 1987) in their productions by substituting these "unfamiliar sounds" with the /s/ sound, which, interestingly, is not permitted word-finally in the NL either. NL transfer was not operative at all in these instances. Instead, I conjecture that this must be a developmental process in the Ss, as suggested by Altenberg & Vago (1987) as a process in which the learners substituted a more marked sound by a less marked sound, i.e., in this case, replacing these unfamiliar sounds by the /s/ being unspecified for place of articulation (Clements 1985), and closest to the sounds being substituted, for manner of articulation.

Also in Nguyen & Brouha, there is evidence to support the deletion of the Cs that follow the diphthongs ending with the sound / ɪ/ or /ʊ/ as discussed earlier in Benson's subjects. Some of the examples are:

Gloss		IL realizations
prize	/pɹajz/	===>> / pɹaj/ / pɹejzə/ / pɹizə/ (see note * below)
case	/kejs/	===>> /ke:/ /kæ:/
house	/haʊs/	===>> /haʊ/

This leads to Strategy # 3 in the reduction process:

Strategy # 3: a. Delete a C in codas if this C is not permitted in NL codas.
b. To preserve structure, substitute a marked C by the closest unmarked one.

IV. Osburne (1996). Osburne's only subject was the most advanced L1 VN learner among all the Ss in these four studies, with a relatively large corpus of data from two informal and spontaneous speeches taped at two different times, in 1985 and 1991, respectively. As stated by Osburne, this speaker must be considered "an extremely advanced user of this L2", i.e., his command of English was to be looked at as the culmination of the VN-English IL sample. Table 7 is a list of the subject's speech samples selected from her Appendix B. Osburne's conclusions included the following:

(*) There is also evidence of epenthesis, which may support the recoverability principle proposed by Kaye (1981) and Weinberger (1987). But this is beyond the scope of this paper.

a. Rare deletions of single Cs. This can be considered as evidence that this subject had mastered the preliminary steps that consist of deleting singletons, i.e., he had overcome a beginner's errors in final cluster reduction/deletion. Most of this subject's productions were closed syllable words resulting from TL words that contain final consonant clusters, i.e., he also adopted Strategy # 1, namely, prefer reduction over deletion.
b. Deletions of the Cs that are not permitted in NL, e. g., /l/ /z/ /r/. This subject was using Strategy # as still being influenced by the NL transfer. Specifically regarding his deletion of /r/, I believe Osburne's assumption is correct in so far it is not an existing final sound in the NL. I would like, however, to offer another explanation for his non-rhotic accent: being a Hanoi dialect speaker, he would not have the /r/ sound in his NL phonological inventory, even word-initially, as the /r/ being realized as /z/ in the Hanoi dialect (see Thompson 1965).
c. Deletions of the Cs involving /w/ and /j/. As an alternative to Osburne's analysis regarding the reduction of consonant cluster triggered by these sounds, regarded as glides, I would like to offer an analysis based upon the NL facts discussed earlier concerning the formation of diphthongs/triphthongs in Vietnamese. Since a vowel can take on either another vowel to create a new word (=diphthong or VV word), e.g., /a/ + /ɪ/ => /aɪ/ or another consonant to create a new word (=VC word), e.g., /a/ + /n/ => /an/. Thus, once a VV word is formed by this morphological process, it will not allow any C to follow. This NL fact can explain and predict the reason for the consonant (s) to be deleted after the sounds /ɪ/ or /ʊ/ in the TL words.

Table 7. Sample Errors in Osburne's Subject
(Data from Osburne's Appendix B)

English words	IL realizations	English words	IL realizations
that's	dæt¬/ðæt¬/ræt¬	evidence	ɛvidɛn
units	ju:nɪt¬/ junɪt¬	variance	væriæn
thoughts	t^hɑt¬	contentions	k^hənt^{h}ɛnʃən
estimates	ɛstɪmət¬	concerns	k^hənsɜn
talked	t^hɔk¬	questions	k^hwɛstʃən
suspect	səspɛk¬	comments	k^hɑmɛn
inconsistent	iŋk^hənsistən	funds	fʌn
equivalent	ik^{h}wɪvəlɛn	think	t^hɪŋk/ t^hɪŋ
significant	sɪgnɪfik^{h}n? sɪgnɪfik^{h}ən	drawings	drɔɪŋ
front	frʌn	best	bɛs
jump	dʒʌm	investments	ɪnvɛsmɛn
named		exist	ɛgzɪs
spend	spɛn	finished	fɪnɪʃ
fund	fʌn	help	hɛlf / hɛl
change	tʃ^{h}ejndʒ/ tʃ^{h}ejn	built	bɪl
ask	æs	detailed	dit^{h}ejl
risk	rɪs	called	k^hɔl
month	mʌn	else	ɛl
down	dawn/daw/raw	light	laj
sound	saw	like	laj
avoid	əvɔj	guys	gaj
quantified	k^hwantɪfaj	point	p^hɔj
groups	gruwps	adjustments	ædʒʌsmɛn
terms	t^hɜm	amount	əmaw

Osburne concluded that there was a regularity in the cluster reduction in this L1 VN learner, i.e., the reductions were not random at all. She observed that the subject almost always kept the first C and optionally dropped all the others in a cluster. This is to be expected, since it is almost always the case that the C closest to the nucleus is the most sonorous, except when [s] follows, according to the Sonority Principle (Clements 1992) and that the recoverability principle (Weinberger 1987) must be observed at the same time. This last strategy thus becomes:

Strategy # 4: Optionally dropping all the Cs in a final cluster except the first.

SYSTEMATICITY OF SYLLABLE CODA REDUCTION BY VN LEARNERS

Final consonant cluster reduction is a process used not solely by L2 learners trying to acquire a TL. It is also a process widely used by native English speakers in casual speech (Osburne 1996).

However, there is a difference in the reduction by native speakers (NS) as compared to the reduction by non-native speakers (NNS). It is precisely this difference that, at least partially, makes the NNS speech sounds "foreign". Osburne cited the following example from Temperley (1983):

Table 8. Final Consonant Cluster Reduction: NS vs. NNS

Speaker	Phrase	Production	Reduction Process
Native	facts are	/fæksaɹ/	preserving inflectional endings
Non-Native	facts are	/fæktaɹ/	not preserving inflectional endings

In a study of word-final consonant clusters in the English productions of native Cantonese, Japanese, and Korean speakers, Eckman (1987) proposed this "cluster reduction" rule (CR):

C C (C) # ===> C (C) #.

(Optionally delete one member of a final tri-literal consonant cluster; optionally delete one member of a final bi-literal consonant cluster)

Eckman's rule was intentionally stated in a most general way, because without considering the typological markedness between English and these NLs, there is no way to predict what C would be deleted, solely based upon the consonant quality or its position in the cluster, i.e., there is no patterns in these reductions at all. I believe Eckman is correct in pointing out that the CR as stated above can be considered "universal", i.e., applicable to any "generic" L2 learner without considering a specific native language. In this paper, however, I have reviewed different strategies used by the Ss by considering various areas of impact caused by the influence of Vietnamese on the productions of the TL. These four strategies can now be collapsed into a unified driving mechanism that guides the reduction of SF CCs in VN learners according to this algorithm: Start at the syllable nucleus. If the nucleus is a diphthong, delete the cluster; if it is a single vowel, delete or substitute non-native codas; otherwise, try to preserve it. Based on Eckman's general rule for cluster reduction (CR) above, and in accounting for the NL constraints/influences I have reviewed in Sato, Benson, Nguyen & Brouha, and Osburne, I propose the following rule for the reduction of English syllable final consonant clusters in the VN-English Interlanguage:

$\_\_V_{1/2}\ C_1\ C_2\ C_3\ \#$ =➔ (a) $\_\_V_2\ \#$ i.e. if nucleus is a diphthong, delete all subsequent Cs.

=➔ (b) $\_\_V_1\ C_1\ \#$ i.e. if nucleus is a single vowel, delete/substitute non-native codas; otherwise keep the first C in the cluster.

This VN-English IL rule does take into account the NL influence (which seems to be considerable for these Ss), the quality of the syllable nucleus, and the developmental factors as the Ss progress in their L2 acquisition process.

CONCLUSION

I have reviewed the strategies that the Ss in the four studies had utilized, at various stages of L2 learning, in their process of reconstructing syllable final consonant clusters in their ILs. Both NL influence (quality of the syllable nucleus, fossilization, interference) and developmental factors (markedness, structure preservation) seemed to be operative in these strategies, the degree of impact of each factor depends on the stage the learner was at the time. I would conjecture that, in general, the order these strategies were examined here roughly reflects the order of progress that would take place in a learner's internal system, i.e., going from the very beginning stage to a very advanced stage in the L2 acquisition journey, although an advanced learner may not necessarily have completely eliminated an elementary error. The IL rule I propose in this paper still needs further study to be either validified or falsified. However, it seems that some degree of systematicity has been established for all the Ss involved in these studies concerning the final consonant cluster reduction in their English productions. I believe it was this systematicity that had surfaced in the speaker's taped speech that provided the students of the SLA Course (LING582) important cues in helping them identify the linguistic background of the speaker in their class experiment, with reliable clues.

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*-ING*LISH 101

Brian Rose

The type of verbs which Milsark shows to be unreceptive to *-ing* affixation arguably have an already standardized adjectival affix of a different origin. Verbs which have an adjectival counterpart must belong to one of two different groups with different looks or possible adjectival endings. If we look at examples (6) and (7) (Milsark 1988: 616)

6 a. a very interesting person
b. Mary seems interesting.
c. an astonishing event
d. It seemed astonishing at the time.

7 a. *a very talking person
b. *Mary seems talking.
c. *a forgetting person
d. *John seemed forgetting.

We can replace the *-ing* forms of the verb-derived adjectives with other forms. For example, *talking* in (7a) and (7b) can be replaced with talkative, and *forgetting* in (7c) and (7d) with forgettable of forgetful. In (6) *interesting* and *astonishing*, the only other adjectival forms of these verb-derived adjectives are the *-ed* affixed forms such as interested or astonished (or *-en* in irregular verbs such as forgot - forgotten.)

Some adjectives have an acceptable *-ed* form even in the absence of an *-ing* form. The verbal qualities still present in this class of adjectives can be seen across the spectrum of possible entries in the adjective category via the affixed morphology.

*a hating person
a hateful person
a (much) hated person

*a liking person
a likable person
a (well) liked person

-ing adjectives however are limited to the two forms already mentioned (*-ing, -ed*). There are no other adjectival affixes in current acceptable use for these words (interest, astonish).

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SUBJECT CONTROL AND NONSUBJECT CONTROL

Marietta Bradinova

Many linguists, including Williams, propose a distinction between two types of verbs: those that take *subject control (want, promise*. etc.-i.e. verbs whose subject controls the PRO subject of a following infinitive); and those that take *nonsubject control (persuade*, etc.- i.e. verbs where the PRO subject of a following infinitive is governed by some complement of the higher verb which is not its subject, e.g. its object).

It seems likely that the question of whether a control predicate takes subject control or nonsubject control will ultimately turn out to follow directly from the meaning of the predicate concerned: indeed, it seems likely that classifying predicate strictly into a single control-class is a misguided enterprise. Consider the examples:

(1)(a) John pleaded with Bill PRO to leave
(b) John pleaded with Bill PRO to be allowed to leave

(2)(a) John appealed to Bill PRO to leave
(b) John appealed to Bill PRO to be allowed to leave

In (1) (a) and (2) (a), PRO has nonsubject control, and is interpreted as referring to *Bill*; but in (1) (b) and (2) (b) , PRO has subject control and is interpreted as referring to *John* instead. Shall we then say that verbs like *plead* and *appeal* allow *either* subject or nonsubject control? I think that's no good as a solution, because it wrongly predicts that PRO can refer to either *John* or *Bill* in all four of the sentences in (1) and (2). And to complicate matters still further, in sentences like:

(3) John asked Bill to leave

there are dialect disagreements over the preferred interpretation of PRO: for British speakers , PRO here must have nonsubject control and hence refer back to *Bill*; but for many American speakers, the preferred interpretation would be for PRO to have subject control, and hence refer back to *John*: to be more concrete, the difference of interpretation is over the question of whether (3) should be paraphrased as in (4) (a) or (b) below:

(4)(a) John2 asked Bill3 if he3 would leave
(b) John2 asked Bill3 if he2 could leave

This control difference might reflect a difference in the meaning of the verb *ask* in the two dialects.

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IT, THERE, AND FIRST CONJUNCTS

Terri Rhyne

McCloskey (1991) makes the claim that while pleonastic "there" is syntactically linked with its postverbal argument, expletive "it" never is, even when plural agreement seems to be appropriate. To illustrate this point, he provides the following two examples (18 and 19 in McCloskey 1991):

1. *It seem at this point equally possible that he'll resign and that he'll stay in office.

2. It seems at this point equally possible that he'll resign and that he'll stay in office.

Superficially, the ungrammaticality of (1) would indicate that pleonastic "it" can never take plural agreement, even in the presence of conjoined propositions. However, following the argumentation of Boskovic (1997), McCloskey fails to notice that "even in expletive 'there' constructions the verb does not agree with the conjoined associate NPs."
Consider the following:

3. There is a dog and two cats in the house.

4. *There are a dog and two cats in the house.

5. There are two cats and a dog in the house.

Clearly in (3), "there" is syntactically linked only to the first conjunct "a dog" as exhibited in the singular agreement. Moreover, this interpretation holds in (5) with "there" taking plural agreement with "two cats" as the first conjunct, which in turn accounts for the ungrammaticality of (4). If this is indeed the case, then it can be argued that the pleonastic "it" in (2) is in agreement only with its first conjunct as well (Boskovic, 1997). Therefore, expletive "it" and "there" cannot be differentiated on the basis of agreement and deserve equal status syntactically as semantically empty subjects.

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