

T
620

A CONTRASTIVE ANALYSIS OF AMERICAN ENGLISH AND
COLLOQUIAL FARSI: THE SEGMENTAL PHONEMES

by

Sed Hassan Hosseinipur

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of
Arts in Education in the American
University of Beirut
Lebanon, 1964

CONTENTS

	Page
TABLES.....	iv
PREFACE.....	vi
Chapter	
I. THE PHONEMES OF ENGLISH.....	1
A. The Vowels	
B. The Consonants	
II. THE PHONEMES OF FARSI.....	18
A. The Vowels	
B. The Consonants	
III. ENGLISH AND FARSI CONTRASTED.....	45
A. The Vowels	
B. The Consonants	
C. Summary	
D. Order of Presentation	
IV. SAMPLE LESSONS.....	89
A. Lesson on /θ/	
B. Lesson on /i/ and /iy/	
C. Lesson on the Consonant Cluster /st/	
D. Lesson on /k/	
APPENDIXES.....	111
A. Farsi Sounds in Minimal Contrast	
B. Diacritics	
BIBLIOGRAPHY.....	122

TABLES

Table	Page
1. THE COMPLEX NUCLEI OF ENGLISH.....	4
2. THE CONSONANT PHONEMES OF AMERICAN ENGLISH.....	5
3. THE CONSONANT PHONEMES OF COLLOQUIAL FARSI.....	23
4. THE PHONEME /i/.....	50
5. THE PHONEME /e/.....	51
6. THE PHONEMES /æ/ and /a/.....	52
7. THE PHONEME /u/.....	53
8. THE PHONEME /ɔ/.....	54
9. THE PHONEME /p/.....	61
10. THE PHONEME /b/.....	62
11. THE PHONEME /t/.....	63
12. THE PHONEME /d/.....	64
13. THE PHONEME /k/.....	65
14. THE PHONEME /g/.....	66
15. THE PHONEME /f/.....	67
16. THE PHONEME /v/.....	68
17. THE PHONEME /s/.....	69
18. THE PHONEME /z/.....	69
19. THE PHONEME /ʃ/.....	71
20. THE PHONEME /ʒ/.....	71
21. THE PHONEME /ç/.....	72
22. THE PHONEME /j/.....	73

Table	Page
23. THE PHONEME /m/.....	73
24. THE PHONEME /n/.....	74
25. THE PHONEME /l/.....	75
26. THE PHONEME /r/.....	76
27. THE PHONEME /y/.....	76
28. THE PHONEME /h/.....	77
29. POSSIBILITIES OF CONSONANT CLUSTERS IN ENGLISH.	78
30. POSSIBILITIES OF CONSONANT CLUSTERS IN FARSI...	79
31. FREQUENCY OF OCCURRENCE OF ENGLISH PHONEMES....	85
32. FREQUENCY OF OCCURRENCE OF SYLLABLES IN ENGLISH	86

PREFACE . . .

Charles Fries gives us the basic assumption regarding the preparation of teaching materials. He says,

The most efficient teaching materials are those that are based upon a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner.¹

Robert Lado gives us an equally important assumption implied in that of Fries. He says,

Individuals tend to transfer the forms and meanings, and the distribution of forms and meanings, of their native language... to the foreign language... both productively... and receptively....²

The latter assumption is supported by the actual observation of the speech of non-English speakers learning English.

The pronunciation of a German speaker learning English is quite noticeably different from that of a Spanish speaker learning English, and both are different from that of a Chinese speaker learning the same variety of English.... The distortions in the English pronunciation of a German speaker will bear

¹Charles C. Fries, Teaching and Learning English as a Foreign Language (Michigan: Ann Arbor, University of Michigan Press, 1962), p. 9.

²Robert Lado, Linguistics Across Cultures (Michigan: Ann Arbor, University of Michigan Press, 1960), p. 11.

great similarity to the distortions of other German speakers just as the distortions in the English pronunciation of a Spanish or Chinese speaker are similar to those of other speakers of the same language.¹

If the above assumptions and observations are true, then Farsi speakers learning English must transfer the structure of Farsi to that of English, thus making distortions that can be predicted and described.

The purpose of this thesis is to make a contrastive phonemic analysis of the segmentals - vowels, consonants, and consonant clusters - of American English and colloquial Farsi. On the basis of this analysis we can predict and describe the sounds with which Farsi speakers learning English may have difficulty. Then we can prepare, select, or supplement teaching materials for the teaching of English pronunciation to Farsi speakers. It is, however, not the purpose of this thesis to prepare the teaching materials, though in Chapter IV modern methods of teaching pronunciation have been discussed and four sample lessons have been provided.

At this point we may explain what we mean by American English and colloquial Farsi. By American English is meant the analysis made by G.L. Trager and H.L. Smith in An Outline of English Structure. It is a description

¹Ibid., p. 11.

X

of almost all dialects of English.¹

By colloquial Farsi is meant the spoken dialect of Tehran used in schools and among the educated people of Tehran. This dialect is distinct from literary Farsi or the official language used for newsbroadcasts. It is also distinct from other dialects and subdialects of Farsi spoken either in Tehran or elsewhere.

As stated above, this thesis contrasts the segmentals of the two languages just defined. It consists of four chapters and two appendixes. Chapter I gives a linear outline of English structure. Chapter II is the results of the writer's analysis of Farsi in outline form. Chapter III is the contrastive analysis of the two languages, though the discussion on consonant clusters is only a touch on the surface. And Chapter IV gives four sample lessons on some of the problem sounds. The appendixes show A. Farsi phonemes in minimal contrast, B. the diacritics used in this work.

Since this thesis covers only the segmental phonemes of the two languages, further work remains to be done. Areas that need further study are (1) a thorough analysis of Farsi consonant clusters to be contrasted with those of English, (2) an analysis of the suprasegmentals of Farsi² to be con-

¹See infra, p. 1.

²An analysis of the suprasegmentals of Farsi has already been made. See: Carleton Hodge, Spoken Persian (Washington: Center of Applied Linguistics, 1960).

trasted with those of English. It is also desirable to prepare teaching materials on the basis of these studies.

To complete this thesis the writer has received generous help, guidance and encouragement from his thesis committee, Dr. Richard Yorkey, Chairman; Dr. Louis Cajoleas; Dr. Daniel Cook; and Mr. Fred Cadora. He wishes he were able to thank them enough for what they have done to help him.

CHAPTER I

THE PHONEMES OF ENGLISH

The outline of the phonemes of English presented in this chapter has been taken from An Outline of English Structure by G.L. Trager and H.L. Smith.

As stated in its introduction, this book is the result of twelve years of observation and examination of a large number of speakers of English --

Americans from all parts of United States; Canadians from the Eastern, Central, and Western Canada; speakers from Great Britain: Southern British and other provincial dialects, Scottish speakers and Irish speakers; Australians; New Zealanders; South Africans; and various British Colonial Regions. Therefore, this analysis holds for as much of the system as any one idiolect or dialect that the authors have observed. By extrapolation it is stated to be the analysis for the total pattern of all dialects of English.

This analysis, as can be easily judged and as the authors claim too, is the best analysis made so far of English structure; it can, therefore, be a valuable basis for contrastive analyses of English and other languages.

The following is a linear outline extracted from the above-mentioned book. Naturally all explanatory details that would not contribute to our contrastive analysis here have been omitted. Some adaptations with regard to English

allophones have also been made. For example, Trager and Smith distinguish four degrees of length. Here they have been reduced to two for practical purposes. (Where such adaptations have been made, they have been mentioned.)

A. The Vowels

Discussing the ranges of vowel quality of syllabic nuclei in English, Smith and Trager conclude that there are nine simple and twenty-seven complex vowel phonemes in English.

1. The simple vowels. The simple vowels of English are: /i e æ ɪ ə a u ɔ ʊ/. Below is the phonetic description of each.¹

/i/ is a lax, lower high, front, unrounded vowel, namely, [ɪ].

/e/ is a lax, mean mid, front, unrounded vowel, namely, [E].

/æ/ is a tense, higher low, front, unrounded vowel, namely, [æ].

/ɪ/ is a lax, lower high, central, unrounded vowel, namely, [ɪ̥].

/ə/ is a lax, lower mid, central, unrounded vowel, namely, [ʌ].

/a/ is a lax, low, central, unrounded vowel, namely, [a].

/u/ is a lax, lower high, back, rounded vowel, namely, [U].

¹For a better understanding of the vowel symbols used in this thesis see: B. Bloch and G.L. Trager, Outline of Linguistic Analysis (Baltimore Md. : The Waverly Press, 1942), p. 22.

/o/ is a lax, lower mid, back, rounded vowel, namely, [ɒ].

/ɔ/ is a lax, low, back, rounded vowel, namely, [ɔ].

The allophones of the above phonemes show exact pattern congruity in their distribution. Each phoneme has a long allophone and a short allophone in complementary distribution. The long allophones occur before voiced consonants; the short ones occur before voiceless consonants. For example,

/i/ has [iː] and [ɪ], as in bid and bit;

/e/ has [eː] and [ɛ], as in bed and bet;

/æ/ has [æː] and [æ], as in bad and bat; etc.

The phoneme /ə/ has actually three allophones, namely, [ə], [ʌ] and [ʌː]. [ə] is central and retracted. It occurs in unstressed position, as in about. The other two are back and raised. They occur in stressed positions, as in but and bud.

2. The complex vowels. There are twenty-seven complex nuclei analyzed as /VS/ where /V/ means vowel and /S/ means semivowel. They are made up of the nine simple vowels followed by the three semivowels /y w h/; that is, if we add the three semivowels to each of the nine simple vowels, we will have 27 complex vowels.¹ The complex vowels are:

¹For an illustration of the occurrence of all the thirty-six syllabic nuclei in the several varieties of English see: G.L. Trager and H.L. Smith, An Outline of English Structure (Washington: American Council of Learned Societies, 1957), pp. 27-29.

TABLE 1

THE COMPLEX NUCLEI OF ENGLISH

iy	iw	ih
ey	ew	eh
ɤy	ɤw	ɤh
ɪy	ɪw	ɪh
əy	əw	əh
ay	aw	ah
uy	uw	uh
oy	ow	oh
ɔy	ɔw	ɔh

Each of the complex vowel phonemes has two degrees of length, long before voiced consonants and finally, short before voiceless consonants.

The thirty-six syllabic nuclei of English do not all occur in the speech of any one speaker. Smith and Trager say that

The usual situation is five or six simple vowels and some ten or half a dozen vowel-semivowel sequences appearing very frequently, and the other simple vowels and some half a dozen or more complex nuclei being found only in a few, or sometimes even one, lexical items.¹

B. The Consonants

The consonant phonemes of English are: /p t k b d g ʃ j f θ s ʃ v ʒ z ʒ m n ŋ l r w y h/. The table below

¹Ibid., p. 22.

classifies them phonetically.

TABLE 2
THE CONSONANT PHONEMES OF AMERICAN ENGLISH

		Bi-labial	Labio-dental	Apico-dental	Apico-alveolar	Fronto-palatal	Dorso-velar	Glottal	Retro-flex
Stops	vd.	b			d		g		
	vl.	p			t		k		
Spirants	vd.		v	ð	z	ʒ			r
	vl.		f	θ	s	ʃ			
Affricates	vd.				tʃ				
	vl.				ʃ				
Nasals	vd.	m			n		ŋ		
	vl.								
Laterals	vd.				l				
	vl.								
Semi-vowels	vd.	w				y			
	vl.							h	

1. The simple consonants. The following is a description of each consonant phoneme, its allophones and the distribution of its allophones.

/p/ is a bilabial, voiceless stop. It has the following allophones in complementary distribution:

[pʰ] is aspirated and released. It occurs (1) initially, as in pin; (2) medially before stressed vowels, as in repeat; (3) finally in free variation with [p̚], as in keep.

[p̚] is unreleased. It occurs (1) medially before stops, as in captive; (2) finally in free variation with [pʰ], as keep.

[p] is fortis, unaspirated and released. It occurs (1) medially before unstressed vowels, as in copy; (2) everywhere before consonants, as in pray, play, pure.

[P] is lenis unaspirated and released. It occurs after /s/, as in speak.

/t/ is an apico-alveolar, voiceless stop. It has the following allophones in complementary distribution:

[t^h] is aspirated and released. It occurs (1) initially, as in tin; (2) medially before stressed vowels, as in retain; (3) finally in free variation with [t^h], as in hat.

[t^l] is unreleased. It occurs (1) medially before stops, as in rat trap; (2) finally in free variation with [t^h], as in hat.

[t] is fortis, unaspirated and released. It occurs (1) medially before unstressed vowels, as in heating; (2) everywhere before consonants, as in tray, twine.

[T] is lenis unaspirated and released. It occurs after /s/, as in steam.

The phoneme /t/ has two other allophones, namely, [t_v] which is voiced fortis, and [ʔt] which is a glottal stop with secondary apical articulation. We will not deal with these two since their distribution is limited to a few dialects.

/k/ is a dorso-velar, voiceless stop. It has the following allophones in complementary distribution:

[k^h] is aspirated and released. It occurs (1) initially, as in kid; (2) medially before stressed vowels, as in occur; (3) finally in free variation with [k[̚]], as in seek.

[k[̚]] is unreleased. It occurs (1) medially before stops, as in cocktail; (2) finally in free variation with [k^h], as in seek.

[k] is fortis, unaspirated and released. It occurs (1) medially before unstressed vowels, as in socket; (2) everywhere before consonants, as in clay, cry, quiet.

[K] is lenis, unaspirated and released. It occurs after /s/, as in ski.

/b/ is a bilabial, voiced stop. It has three allophones in complementary distribution:

[^bb] is accompanied by a voiceless onglide. It occurs initially, as in big, brain.

[b] is fully voiced. It occurs medially, as in rubber.

[b[̚]] is accompanied by a voiceless offglide. It occurs finally, as in superb, cub.

[b[̚]] is unreleased. It occurs before stops.

/d/ is an apico-alveolar, voiced stop. Its allophones are congruent with those of /b/ (see /b/ above.). Examples are: dig, ready, bad.

/g/ is a dorso-velar, voiced stop. Its allophones are congruent with those of /b/ (see /b/ above.). Examples are: give, foggy, fog.

/tʃ/ is an apico-alveolar, voiceless affricate. It has the following allophones in complementary distribution:

[tʃ^h] is aspirated and released. It occurs (1) initially, as in chin; (2) medially before stressed vowels, as in achieve.

[tʃ] is fortis, unaspirated and released. It occurs (1) medially before unstressed vowels, as in watching; (2) finally, as in watch.

/dʒ/ is an apico-alveolar, voiced affricate. It has the following allophones in complementary distribution:

[dʒ^h] is fully voiced. It occurs initially and medially, as in join, budget.

[dʒ] ends voiceless. It occurs finally, as in hinge.

/f/ is a labio-dentate, voiceless fricative spirant. It has one allophone, which occurs in all positions. Examples are: fig, haft, rough.

/θ/ is an apico-dental, voiceless fricative spirant. It has one allophone, which occurs in all positions.

Examples are: thin, nothing, moth.

/s/ is an apico-alveolar, voiceless, groove fricative spirant. It has one allophone, which occurs in all positions. Examples are: sin, hissing, hiss.

/ʃ/ is a fronto-palatal, voiceless, groove fricative spirant. It has one allophone, which occurs in all positions. Examples are: shine, wished, wish.

/v/ is an apico-dental voiced fricative spirant. It has three allophones in complementary distribution:

[^vv] is accompanied by an initial voiceless onglide.

It occurs initially, as in very, vine.

[v] is fully voiced. It occurs medially, as in shaving, savage.

[ṿ] is accompanied by a final voiceless offglide.

It occurs finally, as in shave, serve.

/ð/ is an apico-dental, voiced fricative spirant. Its allophones are congruent with those of /v/ (see /v/ above.).

Examples are: this, mother, breathe.

/z/ is an apico-alveolar, voiced, groove, fricative spirant. Its allophones are congruent with those of /v/ (see /v/ above.). Examples are: zero, horizon, boys.

/ʒ/ is a fronto-palatal, voiced, groove, fricative spirant. Its distribution is limited. It occurs only medially and finally. Its allophones are congruent with those of /v/ (see /v/ above.). Examples are: measure, rouge.

/m/ is a bilabial, voiced nasal. It has two allophones in complementary distribution:

[m] is short. It occurs initially and medially, as in men, summer.

[m^{*}] is long. It occurs finally, as in dim.

/n/ is an apico-alveolar, voiced nasal. Its allophones are congruent with those of /m/ (see /m/ above.). Examples are: not, hunt, tin.

/ŋ/ is a dorso-velar, voiced nasal. The distribution of this phoneme is limited. It occurs only medially and finally. Its allophones are congruent with those of /m/ (see /m/ above.). Examples are: singer, sing.

/l/ is an apico-alveolar, voiced lateral. It has two allophones in complementary distribution:

[l] is apico-alveolar. It occurs initially, as in long.

[l_x] is apico-alveolar with velar co-articulation. It occurs medially and finally, as in killing, kill.

In final position this allophone is long.

/r/ is a tongue-retraction, non-fricative, voiced spirant.

It has two allophones in complementary distribution:¹

[ɹ] is fronted. It occurs prevocally in initial and medial positions, as in ride, strength.

[ɻ] is retracted. It occurs postvocally in medial and final positions, as in marry, far.

/y/ is a fronto-palatal, voiced semivowel. It has three allophones in complementary distribution:²

[i̟] is high. It occurs before or after high vowels, as in yield, you, sea, mule.

[I̟] is intermediate. It occurs before or after mid vowels, as in yes, young.

[e̟] is low. It occurs before or after low vowels, as in yard, yawn.

/w/ is a bilabial, voiced semivowel. It has three allophones in complementary distribution:

[u̟] is high. It occurs before or after high vowels, as in we, you.

[U̟] is intermediate. It occurs before or after mid vowels, as in wet, go.

[o̟] is low. It occurs before or after low vowels, as in wall, how.

¹Trager and Smith give more than two allophones of /r/. Here only two have been given. See: ibid., p. 35.

²Trager and Smith give six allophones for each of the semivowels /y w h/. See: ibid., pp. 20-22.

/h/ is a glottal, voiceless semivowel. It has three allophones in complementary distribution:

[h^{v}] is lowered high. It occurs before or after high vowels, as in heat, dear.

[h] is intermediate. It occurs before mid vowels, as in hence, dare.

[h^{v}] is lowered mid. It occurs before or after low vowels, as in hard, palm, pam.

The twenty-four consonant phonemes described above occur in all dialects of English.

2. Consonant clusters. A consonant cluster is the "combination of two or more consonants in the same syllable."¹

The possibilities of occurrence of consonant clusters are numerous in English. Initially the possibilities are: CC and CCC. Finally the possibilities are: CC, CCC, and CCCC.

Below is a complete list of the initial and final consonant clusters in American English.²

¹C.D. Buchanan, A Programmed Introduction to Linguistics: Phonetics and Phonemics (Boston, D.C. Heath and Company, 1963), p. 146.

²List of the English consonant clusters has been reproduced from: R. Nasr, The Teaching of English to Arab Students (Longmans, 1963), pp. 20-22.

a. Initial clusters made up of two segments

/pr/	print	/fr/	from
/pl/	place	/fl/	flow
/py/	pure	/fy/	few
/tr/	true	/vy/	view
/tw/	twelve	/my/	mute
/ts/	tsar	/θr/	through
/kr/	cross	/θw/	thwart
/kl/	clean	/st/	start
/kw/	quite	/sp/	spend
/ky/	curiosity	/sm/	small
/br/	break	/sk/	school
/bl/	blue	/sl/	slow
/by/	beauty	/sf/	sphere
/dr/	drop	/sn/	snail
/dw/	dwelling	/sw/	swell
/gr/	ground	/ʃr/	shrink
/gl/	glad	/hy/	human

b. Initial clusters made up of three segments

/spy/	spew	/skw/	square
/sky/	skew	/spr/	spring
/skl/	sclerosis	/skr/	screw
/spl/	splendid	/str/	street

c. Final clusters made up of two segments¹

/ps/	perhaps	/ðd/	bathed
/pt/	except	/dθ/	width
/pθ/	depth	/dz/	beds
/ts/	its	/gd/	tagged
/tθ/	eighth	/gz/	rugs
*/ks/	six	*/ft/	left
/kt/	fact	/fθ/	fifth
*/bd/	robbed	*/fs/	laughs
/bz/	cabs	/vd/	lived
/nč/	pinch	/vz/	lives
/nd/	longed	*/md/	assumed
/ŋk/	think	*/mp/	camp
/nθ/	length	/mt/	dreamt
/nz/	things	/mf/	nymph
*/lt/	difficult	/mz/	comes
*/ls/	else	/nt/	want
*/lf/	self	*/ns/	since
/lp/	help	/nθ/	month
*/rn/	barn	*/nd/	find
/rl/	girl	*/nz/	runs
*/rg/	Lewisburg	*/nǰ/	change
/rp/	harp	/lθ/	health
*/rf/	scarf	*/ld/	hold

¹The ones with an asterisk are found in Farsi too.

*/rʃ/	harsh	/lz/	fills
*/rʒ/	barge	*/lv/	twelve
/θs/	baths	/lk/	milk
*/lb/	bulb	*/rm/	term
*/lm/	elm	*/rb/	absorb
/ln/	kiln	*/rv/	observe
/lʃ/	welsh	/ðz/	bathes
/lč/	filch	/sp/	wasp
/lʒ/	bilge	*/st/	most
*/rs/	force	/sk/	ask
*/rk/	work	*/zd/	raised
*/rt/	start	*/št/	finished
/rθ/	fourth	/zd/	rouged
*/rč/	march	/čt/	approached
*/rd/	hard	*/jd/	judged
*/rz/	years		

d. Final consonant clusters made up of three segments

/pəs/	depths	/dzd/	adzed
/pts/	crypts	/fts/	lifts
/pst/	lapsed	/fəs/	fifths
/tst/	Ritzed	/skt/	risked
/təs/	eighths	/sps/	wasps
/kts/	conflicts	/sks/	asks
/kst/	next	/mps/	camps
/ksə/	sixth	/mpt/	camped

/d@s/	widths	/mft/	triumphed
/dst/	midst	/mfs/	nymphs
/mts/	tempts	/ldz/	holds
/njd/	arranged	/lts/	results
/nts/	hints	/lf@/	twelfth
/nst/	sensed	/lst/	whilst
/n@s/	months	/lmz/	elms
/nzd/	bronzed	/lnz/	kilns
/nçt/	pinched	/rks/	works
/ndz/	sounds	/rkt/	worked
/nst/	amongst	/rst/	first
/n@s/	lengths	/rts/	parts
/lks/	milks	/rdz/	words
/lkt/	milked	/rnt/	aren't
/lpt/	helped	/rnd/	concerned
/lft/	elfed	/rmd/	formed
/lçt/	filched	/rlz/	girls
/lçt/	welshed	/rmz/	terms
/lps/	helps	/rpt/	harped
/l@s/	tilths	/rft/	surfed
/lfs/	Alf's	/rct/	marched
/lbd/	bulbed	/rst/	marshed
/lvd/	delved	/r@t/	earthed
/lmd/	filmed	/rm@/	warmth
/lnd/	kilned	/rld/	world
/lj@d/	bilged	/rfs/	surfs

/lbz/	bulbs	/rbd/	barbed
/rps/	harps	/rvz/	carves
/rvd/	carbed	/rgz/	bergs
/rjd/	charged	/r@s/	hearths
/rbz/	barbs	/rnz/	turns

e. Final clusters made up of four segments

/ksts/	texts	/ltst/	waltzed
/ks@s/	sixths	/lkts/	mulcts
/mpts/	tempts	/lf@s/	twelfths
/mpst/	glimpsed	/rpts/	excerpts
/qtst/	chintzed	/rtst/	quartzed
/nkts/	instincts	/rst@s/	thirsts
/qkst/	minxed	/rldz/	worlds

CHAPTER II

THE PHONEMES OF FARSI

Four analyses have been made of Farsi prior to the present work. Two of these are analyses of literary Farsi - those of S. Neisari and Ann Lambton. The other two are analyses of spoken Farsi - those of S. Chatman and C. Hodge.¹ But none of these gives a complete list of the allophonic variations of the phonemes and, therefore, they do not provide a good basis for a thorough contrastive analysis.

To make the present analysis the writer used himself as informant; prepared a corpus of about 600 items; recorded them on tape; transcribed them into a phonetic alphabet, mostly using the symbols suggested by Trager and Bloch in Outline of Linguistic Structure; and analyzed these data according to general techniques of phonemic analysis, the details of which may not be given here.²

¹The analyses made of Farsi are: (a) Ann K.S. Lambton, Persian Grammar (Cambridge University Press, 1961), pp. xiii-xiv; (b) S. Neisari, Ketabe Avvale Farsi: A Persian Primer (Tehran: n. publisher, 1335), p. 29; (c) Seymour Chatman, "Some Problems in Teaching English Pronunciation to Persian Speakers," Language Learning, IV, 1-2 (1951-52); (d) Carleton Hodge and associates, Spoken Persian (Washington: Center of Applied Linguistics, 1960).

²For techniques of phonemic analysis see: (a) K.L. Pike, Phonemics: A Technique for Reducing Languages to Writing (Michigan: Ann Arbor, University of Michigan Press, 1947); (b) H.A. Gleason, An Introduction to Descriptive Linguistics (New York: Henry Holt and Co., 1955); (c) Bloch and Trager, Outline of Linguistic Analysis.

In this analysis the writer has come to conclusions similar to those reached by the others, except that he has come up with nine simple vowel phonemes whereas the others have found six. The three vowel phonemes which are not found in the other analyses are /e° a° o°/. They have been shown in contrast with other phonemes in the appendix, p. 113

The appendix shows the Farsi phonemes in minimal contrast. This has been put in an appendix because it would not serve any purpose in the contrastive analysis though, of course, it was necessary to show the phonemes in minimal contrast in order to prove their phonemicity.

A. The Vowels

There are nine simple vowels and one complex vowel in Farsi.

The simple vowels of Farsi are: /i e° e a° a u o° o ° / . The complex vowel is /ow/. Below is a description of these vowel phonemes, their allophones, and the distribution of their allophones.

/i/ is a high, front, unrounded vowel. It has two allophones in complementary distribution:

[i°] is long. It occurs in stressed position.¹ For

example,

[qU°-ŕI°]	/qurí/	teapot
[šE-nI°-dam]	/šenídám/	I heard .

¹There are three degrees of stress in Farsi. See: Hodge, Spoken Persian, pp. 1.16-1.19

[I] is short. It occurs in unstressed position.

For example,

[sI-yó°]	/siyó°/	black
[ky' I-llí°d]	/kilid/	key

This sound occurs before /y/ where the longer allophone, [I°], does not occur. In this case it is either stressed or unstressed. For example,

[sI-yó°]	/siyó°/	black
[sí-yó]	/síyó/	black (vocative form)

/e°/ is a long, mid, front, unrounded vowel. It has the single allophone, [E°], which occurs medially and finally.

For example,

[?E°-ló°m]	/?è°lóm/	announcement
[fE°l]	/fe°l/	verb
[mó°-nE°]	/móné/	obstacle

/e/ is a short, mid, front, unrounded vowel. It has the single allophone, [E], which occurs medially and finally.

For example,

[?E-ló°m]	/?elóm/	name of an ancient civilization
[fE-l-fE-l]	/fèl-fél/	pepper
[p'E-sa-řE]	/pesaré/	the boy
[p'E-sá-řE]	/pesáre/	He is a boy.

/a*/ is a long, low, front, unrounded vowel. It has the single allophone, [a*], which occurs in medial and final positions. For example,

[ba* _ˆ d]	/ba*d/	next
[sɪ* _ˆ z-dá* _ˆ]	/sɪzdá*/	thirteen

/a/ is a short, low, front, unrounded vowel. It has the single allophone, [a], which occurs only medially.

For example,

[ba _ˆ d]	/bad/	bad
[ʔab _ˆ r̃]	/ʔabr/	cloud

/u/ is a long, high, back, rounded vowel. It has two allophones, in complementary distribution:

[U*] is long. It occurs in stressed position. For example,

[ʔa-řU* _ˆ g]	/ʔarús/	bride
[zɔ* _ˆ -nU* _ˆ]	/zɔnú/	knee

[U] is short. It occurs in unstressed position.

For example,

[ʔU-nó* _ˆ]	/ʔunɔ/	they; those
[da-vɔ* _ˆ -fU-řU* _ˆ š]	/davɔfurúš/	chemist

/o*/ is a long, mid, back, rounded vowel. It has the single allophone, [ŏ*], which occurs medially and finally. For example,

[mŏ* _ˆ -sĚn]	/mò*sén/	name of a boy
-------------------------	----------	---------------

[mŋ [*]]	/mo [*] /	vine tree
[dŋ [*] -rʰŋ [*] n]	/dò [*] rún/	going round

/o/ is a short, mid, back, rounded vowel. It has the single allophone, [ŋ], which occurs medially and finally. For example,

[mŋ-sÉn]	/mosén/	aged
[dŋ-rʰŋ [*]]	/dorú/	double-faced
[fŋ-nŋ [*] n]	/fonún/	techniques
[dŋ]	/do/	two

/ɔ/ is a low, back, slightly rounded vowel. It has two allophones in complementary distribution:

[ɔ^{*}] is long. It occurs in stressed position. For example,

[ʔɔ [*] -qɔ [*]]	/ʔɔ [*] qɔ [*] /	gentleman
[hÉ-zɔ [*] ř]	/hezɔ [*] r/	thousand

[ɔ] is short. It occurs in unstressed position.

For example,

[ʔɔ-dɔ [*] ms]	/ʔɔdɔ [*] ms/	chewing gum
[xɔ-lÉ]	/xɔlé/	aunt

/ow/ is a complex vowel phoneme made up of the mid back vowel /o/ plus the bilabial offglide /w/. It has the single allophone, [ŋŋ], which occurs in medial and final positions. For example,

[ʔŋŋ-lɔ [*] d]	/ʔowlɔ [*] d/	children
[ʔɔ [*] -bÉ-d,žŋŋ]	/ʔɔ [*] beřow/	beer

B. The Consonants

There are twenty-four consonant phonemes. They are: /p b t d k g q ? f v s z š ž x h č j l m n r w y/.

The chart below classifies them phonetically.

TABLE 3

THE CONSONANT PHONEMES OF COLLOQUIAL FARSI

		Bi- la- bial	Labio- dental	Apico- dental	Apico- alve- olar	Alveo- palat- al	Palat- al	Dorso- velar	Post- velar	Glott- al
Stops	vd.	b		d				g	q	ʔ
	vl.	p		t				k		
Spirants	vd.		v		z		ž			
	vl.		f		s		š		x	h
Affricates	vd.					j				
	vl.					č				
Nasals	vd.	m		n						
	vl.									
Laterals	vd.			l						
	vl.									
Trills	vd.				r					
	vl.									
Semi- vowels	vd.	w					y			
	vl.									

1. The simple consonants. Below is a description of each consonant phoneme, its allophones and their distribution. /p/ is a bilabial, voiceless stop. It has the following allophones in complementary distribution:

[pʰ] is unreleased. It occurs before stops. For example,

[tʰu·pʰ-bò·-zÍ·] /tùpbòzí/ playing ball

[p^h] is aspirated and released. It occurs in all other positions. For example,

[p ^h ŋšt ^h]	/pošt/	back
[ha-yò ^h -p ^h Èy-mó ^h]	/hav>pèym>/	aeroplane
[t ^h U ^h p ^h]	/tup/	ball

/b/ is a bilabial, voiced stop. It has the following allophones in complementary distribution:

[b¹] is voiced unreleased. It occurs before voiced stops and nasals. For example,

[šàb ¹ -dář ^h]	/šàbdár/	a vegetable
[šàb ¹ -nám]	/šàbnám/	dew drop

[b²] is voiceless and unreleased. It occurs before voiceless stops. For example,

[xU ^h p ² -t ^h ar ^h]	/xùbtár/	better
---	----------	--------

[b³] is voiceless, unaspirated and released. It occurs medially before voiceless consonants other than stops, and finally. For example,

[habs]	/habs/	imprisonment
[sI ^h p]	/sib/	apple

[b] is voiced. It occurs in all other positions. For example,

[bŋ-zŋřg ^h y]	/bozórg/	big
[ʔD ^h -bI ^h]	/ʔ>bí/	blue
[šàb-zI ^h]	/šàbzi/	vegetable

[$\underset{\wedge}{b}$] and [$\underset{\wedge}{b}^{\prime}$] have been described as voiceless but grouped with the allophones of /b/ rather than those of /p/. These two sounds contrast with /p/ although they are phonetically similar to it. The minimal pairs below illustrate the point

[$\underset{\wedge}{q}^{\circ} \underset{\wedge}{b}$]	picture frame	[$\underset{\wedge}{q}^{\circ} p^{\circ}$]	a bone
[$\underset{\wedge}{d}^{\chi} I^{\circ} \underset{\wedge}{b}$]	pocket	[$\underset{\wedge}{d}^{\chi} I^{\circ} p^{\circ}$]	jeep
[$\underset{\wedge}{q}^{\circ} \underset{\wedge}{b} - \underset{\wedge}{s} \underset{\wedge}{p}^{\circ} \underset{\wedge}{x} t^{\circ}$]	He made a picture frame		
[$\underset{\wedge}{q}^{\circ} p^{\circ} - \underset{\wedge}{s} \underset{\wedge}{p}^{\circ} \underset{\wedge}{x} t^{\circ}$]	He made a < $\underset{\wedge}{p}^{\circ}$ > = /q>p/.		

/b/ shows exact pattern congruity with /d/ and partial congruity with /g/. In the same way we can prove that [$\underset{\wedge}{d}$] and [$\underset{\wedge}{g}_y$] belong to /d/ and /g/ rather than /t/ and /k/.

/t/ is an apico-dental, voiceless stop. It has the following allophones in complementary distribution:

[t°] is unreleased. It occurs medially before stops, finally post-consonantal in free variation with [t°]. For example,

[$\underset{\wedge}{?} \underset{\wedge}{a} t^{\circ} - \underset{\wedge}{t}^{\circ} \underset{\wedge}{b}^{\circ} \underset{\wedge}{r}$]	/ $\underset{\wedge}{?} \underset{\wedge}{a} t^{\circ} r$ /	grocer
[$\underset{\wedge}{d} \underset{\wedge}{a} s t^{\circ}$]	/ $\underset{\wedge}{d} \underset{\wedge}{a} s t$ /	hand

[t°] is aspirated and released. It occurs in all other positions. For example,

[$\underset{\wedge}{t}^{\circ} \underset{\wedge}{a} \underset{\wedge}{x} - \underset{\wedge}{t}^{\circ} \underset{\wedge}{E}$]	/ $\underset{\wedge}{t}^{\circ} \underset{\wedge}{a} x t^{\circ} E$ /	board; wood
[$\underset{\wedge}{?} \underset{\wedge}{a} \underset{\wedge}{t}^{\circ} - \underset{\wedge}{s} \underset{\wedge}{E}$]	/ $\underset{\wedge}{?} \underset{\wedge}{a} t^{\circ} s E$ /	sneeze

[dE-řaxt ⁶]	/deráxt/	tree
[xat ⁶]	/xat/	handwriting

/d/ is an apico-dental, voiced stop. It has the following allophones in complementary distribution:

[d^h] is voiced and unreleased. It occurs before voiced stops and nasals. For example,

[qàd ^h -bŋ-láŋd]	/qàdboláŋd/	tall
[ʔàhd ^h -nɔ̃-mÉ]	/ʔahdn me/	pact

[d^h] is voiceless and unreleased. It occurs before voiceless stops. For example,

[bad ^h -k ⁶ •ř]	/bàdk ⁶ r/	wrong-doer
---------------------------------------	-----------------------	------------

[d̥] is voiceless, unaspirated and released. It occurs word-medially before voiceless consonants other than stops, and finally. For example,

[màd̥-fÚ ⁶]	/màdfú/	excretion
[bad̥]	/bad/	bad
[mãrd̥]	/mard/	man

[d] is voiced, unaspirated and released. It occurs in all other positions. For example,

[dast ^h]	/dast/	hand
[sàn-da-lí ⁶]	/sàndalí/	chair
[bàd-řang ⁶]	/bàdráŋg/	having a bad colour

/k/ is a velar, voiceless stop. It has the following allophones in complementary distribution:

[k'] is velar and aspirated. It occurs before back vowels. For example,

[k'U•h] /kuh/ mountain

[řE-k'ó• b] /rek'ób/ pedal

[k_y'] is palatalized and aspirated. It occurs in all other positions. For example,

[k_y'am] /kam/ little

[sŋk_y'ř] /sokr/ intoxication

[yEk_y'] /yek/ one

[xU•k_y'] /xuk/ pig

[?ak_y'-bář] /?akbar/ name of a boy

[k¹] is velar and unreleased. It occurs before [k'] only. For example,

[?ak¹-k'p•s] /?akk'ós/ photographer

[k_y¹] is palatalized and unreleased. It occurs before [k_y']. For example,

[t_y^š'í•k_y¹-k_y¹É] /čik_yké/ leaking

/g/ is a velar, voiced stop. It has the following allophones in complementary distribution:

[g] is velar. It occurs before back vowels. For example,

[gõř-bÉ] /gõrbé/ cat

[ná-gU] /nágu/ don't say it

[g̥] is voiceless and palatalized. It occurs in final positions. For example,

[sag̥]	/sag/	dog
[baŋg̥]	/baŋg/	leaf

[g] is voiced and palatalized. It occurs in all other positions. For example,

[g̥Eř-YÉ]	/gèryé/	crying
[xòš-g̥Él]	/xòšgél/	pretty

/q/ is a post-velar, voiced stop. It has the following allophones in complementary distribution:

[q̠] is retracted. It occurs before or after back vowels. For example,

[q̠U•-řI•]	/q̠urí/	teapot
[tγ̥ṣ'Ḍ•-q̠U•]	/čòq̠ú/	knife
[šòUq̠]	/šowq̠/	willingness

[q̡] is fronted. It occurs before or after front vowels. For example,

[q̡Er-mÉz]	/q̡erméz/	red
[dál-q̡ákγ']	/dalq̡ak/	clown
[ʔa-řáq̡]	/ʔaráq̡/	perspiration

[q̠̚] is retracted, unreleased. It occurs before stops after back vowels. For example,

[ʔòq̠̚-dÉ]	/ʔòq̠̚dé/	complex
------------	-----------	---------

[q̡̚] is fronted, unreleased. It occurs before stops after front vowels. For example,

[řàq̡̚-q̠'ṣ]	/ràqq̡̚s/	dancer
--------------	-----------	--------

/ʔ/ is a glottal stop. It has the single allophone, [ʔ], which occurs in all positions. For example,

[ʔa-ʔÚ•s]	/ʔarús/	bride
[mʌ-ʔàl-lÉm]	/mʌʔàllém/	teacher
[mɔ̃•-yÉʔ]	/mɔ̃yéʔ/	liquid

/f/ is a labio-dental, voiceless, fricative spirant. It has two allophones in complementary distribution:

[f̥] is accompanied by lip-rounding. It occurs before or after back vowels. For example,

[f̥ʊ̃-ʔán]	/f̥owrán/	immediately
[kʏ'a-f̥ɔ̃•f̥]	/kaf̥ɔ̃f̥/	sufficiency

[f] is not accompanied by lip-rounding. It occurs before or after front vowels. For example,

[fã̃-dɔ̃•]	/fãrdɔ̃/	tomorrow
[kʏ'af]	/kaf/	floor
[bã̃f]	/barf/	snow

/v/ is a labio-dental, voiced, fricative spirant. It has the following allophones in complementary distribution:

[v̥] is accompanied by lip-rounding. It occurs before or after back vowels. For example,

[v̥ɔ̃•-ʔÚ•]	/v̥òrú/	somersault
[p'ɔ̃•-v̥ʌ-dástʰ]	/p'òvodást/	foot and hand
[gɔ̃•v̥]	/gɔ̃v/	cow

[v] is not accompanied by lip-rounding. It occurs

before or after front vowels. For example,

[vá-ll]	/váli/	but
[gò·-vÉ]	/gòvé/	the cow
[sa·v]	/sa·v/	mistake

[v̥] is voiceless in final, post-consonantal position.

For example,

[sařv̥]	/sarv/	cyprus
---------	--------	--------

/s/ is an apico-alveolar, voiceless, fricative spirant. It has the following allophones in complementary distribution:

[s̥] is accompanied by lip-rounding. It occurs before or after back vowels. For example,

[s̥ɔ̃řx̥]	/sɔ̃rx̥/	red
[màn-s̥Ú·ř̥]	/mànsúr/	name of a boy
[ʔa-ř̥Ú·s̥]	/ʔarús/	bride
[bɔ̃k̥y̥'s̥]	/boks/	boxing

[s] is not accompanied by lip-rounding. It occurs before or after front vowels. For example,

[sař]	/sar/	head
[hɔ̃-sÉyn]	/hoséyn/	name of a boy
[ma-gyás]	/magás/	fly (the insect)
[tářs]	/tars/	fear

/z/ is an apico-alveolar, voiced, fricative, spirant. It has the following allophones in complementary distribution:

[z̥] is accompanied by lip-rounding. It occurs before or after back vowels. For example,

[z̥ɔ̃•r̃]	/zo•r/	noon
[b̃•-z̥ɔ̃•r̃]	/b̃•z̥ɔ̃•r/	market place
[gɔ̃•z̥]	/gɔ̃•z/	gas

[z] is not accompanied by lip-rounding. It occurs before or after front vowels. For example,

[zɪ•r̃]	/zir/	under; below
[na-zá•r̃]	/nazar/	viewpoint
[gɣaz]	/gaz/	a kind of sweet

[z̥̣] is voiceless and accompanied by lip-rounding. It occurs in final post-consonantal position when the consonant is preceded by back vowels. For example,

[gɔ̃r̃z̥̣]	/gorz/	a weapon
------------	--------	----------

[z̥̣] is voiceless but not accompanied by lip-rounding. It occurs in final, post-consonantal position when the consonant is preceded by front vowels. For example,

[mar̃z̥̣]	/marz/	border line
-----------	--------	-------------

/š/ is a palatal, voiceless, fricative spirant. It has the single allophone, [ṣ̌], which occurs in all positions.

For example,

[ṣ̌ɪ•r̃]	/ṣ̌ir/	lion
----------	--------	------

[ba-šár̃]	/bašár/	human being
[řI•š]	/riš/	beard

/ž/ is a palatal, voiced, fricative spirant. It has the single allophone, [ž], which occurs in all positions.

For example,

[žḃ•-lÉ]	/žḃlé/	dew drop
[mŕ-žÉ]	/možé/	eyelash
[ʔḃ•-lI-yó•ž]	/ʔḃliyóž/	alloy

This sound is very infrequent.

/x/ is a post-velar (uvular), voiceless, fricative spirant. It has the following allophones in complementary distribution:

[x] is retracted. It occurs before or after back vowels. For example,

[xŕd]	/xod/	self
[nŕ-xŕóḃ]	/noxód/	pea
[t'ŕx-mÉ]	/t'oxmé/	seed
[šU•x]	/šux/	humorous
[šŕřx]	/sorx/	red

[x̣] is fronted. It occurs before or after front vowels. For example,

[x̣at']	/xat/	handwriting
[šḃ•-x̣Í•]	/šḃxí/	made of horn
[t'ax̣-t'É]	/t'axté/	board

[mI·x̣]	/mix/	nail
[nɛr̥x̣]	/nerx/	price

/h/ is a glottal, voiceless, fricative spirant. It has the single allophone, [h], which occurs in all positions.

For example,

[hɔ̃r̥-mátʰ]	/hòrmát/	name of a girl
[mɔ̃-hɛr̥]	/mòher/	skilful
[mɔ̃h]	/mòh/	moon; month

/č/ is an alveo-palatal, voiceless affricate. It has two allophones in complementary distribution:

[tʃ̥ʰ] is unreleased. It occurs before another [tʃ̥ʰ].

For example,

[bàtʃ̥ʰ -tʃ̥ʰ É]	/bàččé/	child
------------------	---------	-------

[tʃ̥ʰʰ] is aspirated and released. It occurs in all other positions. For example,

[tʃ̥ʰʰ Ešm]	/češm/	eye
[kʲa-tʃ̥ʰʰ ál]	/kačál/	sore-headed
[mɔ̃-tʃ̥ʰʰ]	/mòč/	kiss
[màtʃ̥ʰʰ -bánd]	/mòčband/	wrist-band

/j/ is an alveo-palatal, voiced affricate. It has the following allophones in complementary distribution:

[dʒ̥ʰ] is unreleased. It occurs before another [dʒ̥ʰ].

For example,

[nàdʒ̥ʰ -dʒ̥ʰ ó·r̥]	/nàjǰór/	carpenter
---------------------	----------	-----------

[d_y^ž] ends voiceless. It occurs finally. For example,

[k' b • d_y^ž] /kɔj/ pine tree

[bɔr̃d_y^ž] /borj/ tower

[d_y^ž] is voiced, unaspirated and released. It occurs in all other positions. For example,

[d_y^ž a - yÚ • n] /javún/ young

[p' àn - d_y^ž b' •] /pànjǔ/ fifty

/l/ is a dental, voiced lateral. It has the following allophones in complementary distribution:

[l̥] is voiceless. It occurs finally after voiceless consonants. For example,

[ʔasl̥] /ʔasl/ origin

[sat' l̥] /satl/ pail

[l] is voiced. It occurs in all other positions.

For example,

[lab] /lab/ lip

[qalb] /qalb/ heart

[dEl] /del/ heart

[ʔadl] /ʔadl/ justice

/m/ is a bilabial, voiced nasal. It has the following allophones in complementary distribution:

[m̥] is voiceless. It occurs finally after voiceless consonants. For example,

[řasm̥] /rasm/ custom

[šoxm̥] /šoxm/ to plough

[m] is voiced. It occurs in all other positions.

For example,

[man]	/man/	I; me
[p'ám-bÉ]	/pámbe/	cotton
[k _y 'am]	/kam/	little
[hazm]	/hazm/	digestion

/n/ is a dental, voiced nasal. It has the following allophones in complementary distribution:

[n̥] is voiceless. It occurs finally after voiceless consonants. For example,

[hɑsn̥]	/hosn/	beauty
---------	--------	--------

[ŋ] is velar and voiced. It occurs medially before velar or post velar stops. For example,

[řaŋg _y]	/rang/	colour
[ʔÉŋ-k'ó•ř̥]	/ʔenkór/	denial
[māŋ-qú•l]	/mānqúl/	transferable

[n] is fully voiced. It occurs in all other positions.

For example,

[nU•n]	/nun/	bread
[qand̥]	/qand/	lump sugar
[h zn]	/hozn/	sadness; sorrow

/r/ is an apico-alveolar, voiced trill. It has the following allophones in complementary distribution:

[ř] is flapped. It occurs intervocalically. For example,

[hÉ-řám]	/herám/	pyramid
----------	---------	---------

[\tilde{r}] is voiceless and trilled. It occurs word-finally as well as before voiceless consonants. For example,

[p'E-dá \tilde{r}]	/pedár/	father
[ba \tilde{r} f]	/barf/	snow

[\tilde{r}] is voiced and trilled. It occurs in all other positions. For example,

[\tilde{r} asm]	/rasm/	custom
[g, \tilde{r} -dán]	/gárdán/	neck
[? \tilde{r} - \tilde{r} É]	/? \tilde{r} aré/	saw (the tool)

/y/ is a front-palatal, voiced, semi-vowel. It occurs as an onglide or an offglide.

a. As an onglide it occurs initially, medially prevocalic. For example,

[yEk γ ']	/yek/	one
[g, \tilde{r} -yÉ]	/gèryé/	weeping
[\tilde{r} l-yÉ]	/riyé/	lung

b. As a fronting offglide it occurs after /e a ɔ/. For example,

[sEy1]	/sey1/	flood
[sày-yɔ'h]	/sàyyɔ'h/	tourist
[mí'-xòy]	/míxɔy/	you want

/w/ is a bilabial, voiced semivowel. It occurs only as a back offglide after /o/. For example,

[mɔUd γ]	/mowj/	wave
[? \tilde{r} U-lɔ'd]	/? \tilde{r} owlɔ'd/	children

2. The consonant clusters. An exhaustive list of consonant clusters in Farsi has not been provided; but, analyzing the data, we can safely make the following generalizations:

There are no initial consonant clusters in Farsi. Even loan words have changed in order to adjust to the sound patterns of Farsi. The word class, for example, has changed into /kel's/; the word ski has changed into /'eski/.

There are final two-segment consonant clusters. For example, /mard/ meaning man.

Whereas the possibility in final position is CC, in medial position sequences of three are possible, but there is always a pause before the third element. The possibility is CC/ /C. For example, /xòrdsól/ meaning young.

Below is a partial list of final and medial consonant clusters in Farsi.

a. Final Consonant Clusters¹

*/bd/	/ʔabd/	slave
/bk/	/kabk/	quilt (the bird)
*/bz/	/sabz/	green
/br/	/babr/	tiger
/tr/	/čatr/	umbrella
/ds/	/hads/	guess

¹The ones with an asterisk are found in English too.

/dr/	/badr/	full moon
*/ks/	/ʔaks/	picture
/ql/	/šoql/	job; profession
*/ft/	/raft/	went (he, she or it)
*/fs/	/nafs/	self
/fš/	/kafš/	shoe
/sb/	/ʔasb/	horse
/st/	/mast/	drunk
/sl/	/mesl/	like
/sm/	/rasm/	custom
/sr/	/mesr/	Egypt
*/zd/	/mozd/	wage
/zn/	/vazn/	weight
*/št/	/pošt/	back
/šk/	/xošk/	dry
/šq/	/mašq/	writing exercise
/šm/	/pašm/	wool
/xt/	/deraxt/	tree
/hr/	/šahr/	city
*/jd/	/majd/	greatness
*/lb/	/qalb/	heart
*/lt/	/volt/	volt
*/ld/	/jeld/	cover; volume
*/lf/	/jelf/	not graceful or respectful
*/lv/	/dalv/	pail
*/ls/	/sols/	one-third

*/lm/	/ʔelm/	knowledge; science
*/nd/	/hamd/	praise
*/mp/	/lomp/	lamp
/ms/	/ʔdóms/	chewing gum
/mn/	/dar zémn/	meanwhile
*/nd/	/qand/	lump sugar
/ng/	/rang/	colour; paint
*/ns/	/šons/	chance
*/nz/	/kanz/	treasure (/kanz/ is not in common use)
*/nj/	/panj/	five
*/rb/	/sorb/	lead (the metal)
*/rt/	/čort/	nap; short sleep
*/rd/	/mard/	man
*/rk/	/kork/	a kind of wool
*/rg/	/batg/	leaf
/rq/	/morq/	hen
*/rf/	/barf/	snow
*/rv/	/sarv/	cyprus
*/rs/	/xers/	bear (the animal)
*/rz/	/farz/	assumption; supposition
/rš/	/torš/	sour
/rx/	/čarx/	wheel
/rč/	/q>rč/	fungus
/rj/	/borj/	tower; month
/rm/	/narm/	soft

/rn/	/qarn/	century
/yk/	/peyk/	messenger
/yn/	/hoséyn/	name of a boy

b. Medial Consonant Sequence

/bb/	/ʔàbbós/	name of a boy
/bk/	/čùbkèbrít/	match
/bč/	/toròbčé/	radish
/bn/	/ʔòbnabót/	candy
/br/	/kèbrít/	match
/pb/	/tùpbòzì/	playing ball
/pp/	/kòppé/	heap
/tb/	/fùtból/	football
/tk/	/xàtkéš/	ruler
/ts/	/ʔàtsé/	sneeze
/tr/	/šàtránj/	chess
/db/	/bàndbòz/	acrobat
/dt/	/ziyòdtár/	more
/dd/	/màddòh/	a person who sings religious songs
/dk/	/qàdkùtò/	short (said of a person)
/dx/	/rùdxuné/	river
/dr/	/màdresé/	school
/kb/	/ʔàkbár/	name of a boy
/kt/	/tàkták/	one by one; separate
/kk/	/ʔàkkòs/	photographer

/ks/	/tòksi/	taxi
/kr/	/ʔàkrám/	name of a girl
/qt/	/bá•zivaqtò/	sometimes
/qq/	/bàqqól/	grocer
/qš/	/nàqšé/	map
/qr/	/jòqròfí/	geography
/ʔt/	/ʔèʔtemòd/	trust
/ʔʔ/	/mokàʔʔáb/	cube
/ft/	/ʔòftób/	sun
/ff/	/kàffóš/	shoemaker
/fš/	/kàfšénó•/	new shoes
/vv/	/màvvój/	wavy
/st/	/paràstór/	nurse
/sk/	/ʔèski/	skiing
/sq/	/ʔàsqár/	name of a boy
/ss/	/qàssòb/	butcher
/sx/	/nòské/	prescription
/sm/	/dàsmól/	handkerchief
/sr/	/nàsrín/	name of a girl
/zd/	/bòzdóšt/	arrest
/zf/	/kòqàzfurúš/	seller of paper
/zz/	/bàzzóz/	draper
/št/	/nevèštán/	writing
/šk/	/doròšké/	carriage
/šg/	/xòšgél/	pretty

/šq/	/xòšqálb/	good-hearted
/šš/	/bàšš'š/	gay and smiling
/šm/	/d`nèšmánd/	learned (adj.)
/šl/	/xòšleb's/	well-dressed
/šr/	/ʔàsraf/	name of a girl
/žd/	/mòžde/	good news
/xt/	/dòxtár/	girl
/xr/	/màxrút/	cone
/hs/	/táhsín/	praise
/hr/	/zòhré/	name of a girl
/čk/	/gàčk'or/	a person who makes relief and other designs out of lime, chalk, etc.
/jj/	/nàjj'or/	carpenter
/lp/	/gòlp`yeg'n/	name of a town
/ld/	/gòldún/	vase
/lq/	/ʔabòlq`sem/	name of a boy
/lv/	/šálv'or/	trousers
/lz/	/gòlz'or/	garden; place full of flowers
/lš/	/gòlšan/	garden
/lj/	/málj'áʔ/	shelter; refuge
/lh/	/ʔelh'm/	inspiration
/ll/	/moʔallém/	teacher
/ln/	/gòln'or/	name of a girl
/mp/	/ʔ`mpúl/	injection
/mb/	/pambé/	cotton

/mt/	/kàmtár/	less; fewer
/ms/	/šàmsí/	name of a girl
/mz/	/kànzúr/	weak
/mm/	/hàmmól/	carrier
/mr/	/nòmré/	number
/nd/	/dàndún/	tooth
/nt/	/ʔènteh>/	end
/ns/	/mànsúr/	name of a boy
/nč/	/qončé/	flower bud
/nj/	/fènjún/	cup
/nn/	/bànn>/	builder
/ng/	/ʔàngúr/	grapes
/nk/	/mònkér/	a person who denies
/nq/	/manqul/	transferable
/rb/	/gòrbe/	cat
/rp/	/hez>rp>/	a kind of worm
/rt/	/pòrtoq>l/	orange
/rd/	/č>rdá°/	fourteen
/rq/	/q>rq>r/	the noise the black- bird makes
/rs/	/p>rs>l/	last year
/rz/	/fàrz>né/	name of a girl
/rš/	/xòršíd/	sun
/rx/	/dočàrxé/	bicycle
/rh/	/pìrhán/	shirt; dress
/rč/	/mùrče/	ant

/rm/	/qèrméz/	red
/rn/	/bàrn`mé/	program
/rr/	/ʔ`arré/	saw (the tool)
/ry/	/gèryé/	weeping
/yd/	/mèydún/	piazza
/yz/	/beýzi/	ellipse
/ym/	/mèymún/	monkey
/yl/	/xéyli/	a lot; very

Sequences of three consonants are found in compound words made up of the words ending in clusters made up of two segments plus another element that begins with a consonant sound. There are a few examples:

/bzt/	/sàbzráng/	green
/sbs/	/ʔ`àsbsav`r/	rider (of horse)
/hrd/	/šàhrd`r/	mayor

There are many possibilities like these. There is no need for them to be mentioned here since in dealing with them we will be crossing syllable boundaries. However, their mention here will help us predict the kind of error Farsi speakers may make when trying to produce English clusters made up of three segments or more.

CHAPTER III

ENGLISH AND FARSI CONTRASTED

In comparing the sound systems of a foreign language and a native language I find it good safe practice to take up each phoneme separately The comparison of each phoneme should include at least three checks: (1) Does the native language have a phonetically similar phoneme? (2) Are the variants of the phonemes similar in both languages? (3) Are the phonemes and their variants similarly distributed?¹

The above quotation suggests that we have to compare the phonemic charts of the two languages as well as the allophonic variations of the phonemes since, as Yao Shen says, some allophones can be important.² For example, there is a phoneme /i/ in both English and Farsi. Both have similar allophones, namely, [I] and [I*]. But as the Farsi [I*] is longer than the English [I*], the substitution of it for the English [I*] may be expected to impede communication. One may say heed for hid. Therefore, we have to include a fourth check, namely, "If the variants are different in the two

¹Lado, Linguistics Across Cultures, p. 13.

²For a discussion on the importance of allophones see: Yao Shen, "Some Allophones Can Be Important", Language Learning, IX, 1-2 (1959), pp. 7-18.

languages, will they result in a different structural interpretation for the two languages?"¹

With the above questions in mind the English and Farsi phonemes and their allophones have been contrasted and two categories of English phonemes have been found: (1) English phonemes for which there is no comparable, phonetically similar phoneme in Farsi; and (2) English phonemes for which there is a comparable phonetically similar phoneme in Farsi.

On the following pages these two categories have been considered with reference to K.L. Pike's chart of phonetically similar sounds² used as a basis for the contrast. Then a list of the problem sounds has been made, and it has been indicated whether they present serious or insignificant problems. Also suggestions have been put forward as to what order the problems have to be taught.

It is necessary at this point to refer the reader to the fact that the thirty-six syllabic nuclei do not all occur in the same idiolect or dialect. It is, therefore, not worth attempting to contrast all these sounds with Farsi sounds. It is better to adopt one of the more widely used dialects of English and consider the sounds which occur there.

¹Lado, Linguistics Across Cultures, p. 16.

²Pike, Phonemics, p. 70.

The selection of American English phonemes used in the Michigan English language materials has been adopted for this purpose. Although there are differences between the Trager-Smith and the Michigan systems in the interpretation of phonemes, the adoption is warranted since we are only interested in the number of phonemes that occur most frequently in one of the better-known dialects of English.

Below are the phonemes listed by Fries,¹ but they have been symbolized in the Trager-Smith system. These are the vowel phonemes that will be considered on the following pages.

- /i/ for the vowel in bit, kid
- /iy/ for the vowel in beat, seed
- /e/ for the vowel in bet, bed
- /ey/ for the vowel in bait, made
- /æ/ for the vowel in bat, bad
- /u/ for the vowel in put, wood
- /uw/ for the vowel in shoot, cood
- /ow/ for the vowel in note, road
- /ɔ/ for the vowel in bought, autumn
- /ɑ/ for the vowel in hot, father
- /ə/ for the vowel in but, above
- /ay/ for the vowel in height, hide

¹Robert Lado and Charles C. Fries, English Pronunciation: Exercises in Sound Segments, Intonation and Rhythm (Michigan: Ann Arbor, University of Michigan Press, 1960), p. viii.

/aw/ for the vowel in now, shout

/ɔy/ for the vowel in boy, oil

The consonants are the same number in all dialects of English.

A. The Vowels

1. Simple vowel phonemes for which there is no comparable, phonetically similar sound in Farsi. These are the English phonemes /a ə/ with whose recognition and production Farsi speakers are expected to have difficulty.

The English Phoneme /a/¹

This vowel does not exist in Farsi. Its nearest phonetically similar sounds in Farsi are /ɔ/ and /a/. Therefore, Farsi speakers learning English may hear and say the Farsi /ɔ/ or /a/ for the English /a/. A word like hot may appear as /hɔt/ or /hat/. Since the English /a/ is a low, central, unrounded vowel, and very near the Farsi /ɔ/, which is low back and only slightly rounded, we may expect that /ɔ/ be substituted oftener than /a/. What actually is substituted remains to be observed in the speech of our learners.

The allophones of this phoneme present phonetic

¹The readers' attention is drawn towards the symbol /a/, which represents the English, low, central vowel. It should not be confused with the Farsi low front vowel represented by the same symbol.

problems. Our learners should learn to produce the two allophones of /a/.

The English Phoneme /ə/

The phoneme /ə/, called the shwa, is a lower mid, central, unrounded vowel. It has the Farsi /o > e a/ as its nearest phonetically similar sounds. Farsi speakers learning English may be expected to substitute any of these four for the shwa. A word like cup may appear as /kɔp/, /kop/, /kap/, and /kep/.

The shwa has two allophones conditioned by stress. In the writer's experience students tend to substitute /e/ or /a/ where the shwa is unstressed. A word like about, for example, is usually pronounced as /ebáwt/ or /abáwt/. They substitute /a/ or /ɔ/ where the shwa is stressed. A word like above, for example, is pronounced as /ebáv/ or /ebóv/ (also /abáv/ or /abóv/ according to what we have just said.).

2. Problems with simple vowel phonemes for which there are phonetically similar sounds in Farsi. These are the rest of the English vowels. Of these /i/ and /u/ constitute phonemic problems. The rest are phonetic problems.

The Phoneme /i/

The table below summarizes the distribution of the allophones of /i/ in English and Farsi.

TABLE 4
THE PHONEME /i/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[I*]	before vd. consonants	[I*]	stressed
[I]	before vl. consonants	[I]	unstressed

Similarities: The English [I] and the Farsi [I] are similar. Both are short.

Differences: (1) The Farsi [I*] is much longer than the English [I*]. It is actually as long as the English complex nucleus /iy/. (2) There is a difference in the distribution of the allophones. The English allophones are conditioned by the quality of voice or voicelessness of the consonants following them; the Farsi allophones are conditioned by stress. Therefore, Farsi speakers learning English may easily produce the initial vowel sound in the phrase It's good, but they may be expected to substitute their longer allophone for the stressed vowel sound in the word bit in the phrase bit by bit.

Problems: (1) To recognize the Farsi allophone [I] (as the norm of the vowel /i/ in Farsi is [I*]) because it occurs more frequently than [I], Farsi speakers may not be

aware of the shorter allophone.); (2) to recognize and produce the two English allophones [I^{*}] and [I] where they occur, which implies the elimination of the Farsi [I^{*}] in places where the English /i/ is stressed.

The Phoneme /e/

The table below summarizes the distribution of the allophones of the phoneme /e/ in English and Farsi.

TABLE 5
THE PHONEME /e/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[E [*]]	before vd. consonants	[E]	all positions
[E]	before vl. consonants		

As can be seen in the table, English [E] and Farsi [E] are alike. Both are short. English [E^{*}] is not found in Farsi.

The problem presented here is to recognize and produce the English [E^{*}].

The Phoneme /æ/

The table below summarizes the distribution of the allophones of the English /æ/ and the Farsi /a/.

TABLE 6
THE PHONEMES /æ/ and /a/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[æ̃]	before vd. consonants	[a]	all positions
[æ]	before vl. consonants		

Similarities: The English /æ/ and the Farsi /a/ are similar in that both are low - /æ/ is higher low, /a/ is low.

Differences: (1) /æ/ is tense; /a/ is lax. (2) In pronouncing /æ/ the lips are spread; in /a/ the lips are less spread and the jaws are further apart than in /æ/. (3) English has a long allophone, [æ̃], that Farsi lacks.

Farsi speakers learning English may be expected to substitute their /a/ for /æ/; they may not be able to recognize the allophone [æ̃].

Problems: (1) To recognize and produce a tenser, higher sound than the Farsi /a/; (2) to recognize and produce the long English allophone [æ̃].

The Phoneme /u/

The table below summarizes the distribution of the allophones of the vowel phoneme /u/ in English and Farsi.

TABLE 7
THE PHONEME /u/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[U*]	before vd. consonants	[U*]	stressed
[U]	before vl. consonants	[U]	unstressed

Similarities: Farsi [U] and English [U] are alike.

Differences: (1) Farsi [U*] is much longer than the English [U*]. (2) There is a difference in distribution - Farsi allophones are conditioned by stress; English allophones are conditioned by the voice or voicelessness of the following consonants.

Where the English allophones are unstressed, our learners can produce the English allophones with no difficulty. For example, they may easily pronounce the vowel sound in the first syllable of the word unanimous. But where the English allophones are stressed, our learners may be expected to substitute their native [U*]. For example, they may substitute the Farsi [U*] for the vowel sound in the word pull in the phrase I can't pull.

Problems: (1) To recognize the shorter Farsi allophone (for though they may produce the short allophone, they

may not be aware of it since the norm of the phoneme in Farsi is [U*] because it occurs more frequently.); (2) recognize and produce the two English allophones, which also implies the elimination of the Farsi [U*] in positions where /u/ occurs stressed in English.

The Phoneme /ɔ/

The table below summarizes the distribution of the allophones of the phoneme /ɔ/ in English and Farsi.

TABLE 8
THE PHONEME /ɔ/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[ɔ*]	before vd. consonants	[ɔ*]	stressed
[ɔ]	before vl. consonants	[ɔ]	unstressed

Similarities: English [ɔ] and Farsi [ɔ] are alike.

Differences: (1) English /ɔ/ is rounded; Farsi /ɔ/ is only slightly rounded. (2) The Farsi [ɔ*] is longer than the English [ɔ*]. (3) There is a difference in distribution - the English allophones are conditioned by the voice or voicelessness of the following consonants; Farsi allophones are conditioned by stress.

Here again Farsi speakers can produce the English where it is unstressed. They may pronounce the in already easily. But if the English allophones occur in stressed positions, our learners may be expected to substitute their native [ɒ*]. For example, they may pronounce the vowel in the first syllable of water extra long. Farsi speakers may also be expected to fail to hear and say a well-rounded /ɔ/.

Problems: (1) To recognize the short Farsi allophone [ɒ]; (2) to recognize and produce the two English allophones with particular attention to lip-rounding.

Unlike /i/ and /u/ which present significant problems if the long Farsi allophones are substituted for them, the substitution of the Farsi [ɒ*] does not present any significant problem because in the former case the Farsi learner may produce something like the English complex vowels /iy/ and /uw/, whereas in the latter case we are not dealing with any complex vowel with an initial /ɔ/ which may be confused with /ɔ/. The only significant problem here is one of lip-rounding.

3. Phonemic problems with complex vowels. The English complex vowels we are dealing with in this work are /iy ey ay oy ow aw uw/. Two of these, namely /ow/ and /ey/ occur in Farsi, though /ey/ in Farsi has been analyzed as /VC/. Farsi speakers may have no problem hearing or producing

these two phonemes though the Farsi offglide /y/ is tenser than the English /y/. The rest of the English vowels will be discussed below.

/iy/ is not found in Farsi. Farsi speakers may not find it difficult to recognize and produce it since both elements of /iy/ are found in Farsi. However, they may transfer the long allophone of /i/, namely [I*], since it is as long as /iy/. This necessitates a comparison of /iy/ and [I*].

The difference between the two is that the English complex phoneme is tense; the Farsi [I*] is lax. The problem presented here is to teach the students to recognize and produce the final glide /y/, which is the element that makes the phoneme /iy/ tense.

The same discussion can be carried on about /uw/, which is not found in Farsi. It is easy to make the students recognize and produce this complex vowel phoneme, but as the Farsi phoneme /u/ has a long allophone [U*], which is as long as the English /uw/, Farsi speakers may be expected to substitute [U*] for /uw/.

The difference is that /uw/ is tense because of the offglide; Farsi [U*] is lax. The problem here is to make our students recognize and produce the bilabial offglide /w/, which makes the phoneme /uw/ sound tense.

None of the complex phonemes /ay ɔy aw/ are found in

Farsi. However, these don't constitute any serious problems except the recognition and production of their initial sounds because the final glides exist in Farsi. They can be taught with reference to Farsi utterances in which the glides occur.

B. The Consonants

1. English phonemes for which there is no comparable, phonetically similar sound in Farsi. These are the phonemes /θ ð ŋ w/, which present serious phonemic problems to Farsi speakers learning English.

The Phoneme /θ/

This sound does not exist in Farsi. Its nearest phonetically similar sounds in Farsi are /s/ and /t/, which are found in both languages. Farsi speakers learning English may be expected to hear and say /s/ or /t/ for /θ/. For example, English thin may appear as /sin/ or /tin/.

The conclusion reached above is supported by the actual observation of the speech of Iranian students. They tend to substitute /s/ or /t/ for /θ/.

/θ/ has only one allophone; therefore, there are not any phonetic problems that we have to consider here.

The Phoneme /ð/

This sound does not exist in Farsi either. Its nearest phonetically similar sounds in Farsi are /d/ and /z/,

which are found in both languages. Farsi speakers learning English may be expected to hear and say /d/ or /z/ for /ð/. For example, the word this may appear as either /dis/ or /zis/.

The conclusion is supported by the actual observation of the speech of Farsi speakers learning English.

/ð/ has three allophones, which present problems at the phonetic level. Besides the phoneme, learners ought to learn to recognize and produce

The Phoneme /ŋ/

This sound is not a phoneme in Farsi. There it is an allophone of /n/, occurring before the velar and post-velar stops /k g q/. Therefore, Farsi speakers learning English can easily pronounce English words in which /ŋ/ is followed by the velar stops /g k/, though they may not be aware of this. For example, they will have no trouble pronouncing the words finger and sink. However, when the sound is not followed by velar stops, Farsi speakers may be expected to make two kinds of error: they may change the [ŋ] into [n], or add the voiced velar stops /g q/. We may expect our students to say /sin/, /sing/, or /siŋq/ for the word sing, and /sinə/, /siŋgə/, or /siŋqə/ for the word singer.

It is interesting to notice that in actual speech only /g/ is added and /q/, whose articulation is nearer to

/ŋ/ than /g/ is, is not added. This is probably because the sequence /ŋg/ is much more frequent than /ŋq/, or because the sound is often represented by the letters <ng> in English orthography.

The sound /ŋ/ has two allophones, which present difficulties at the phonetic level. Students should, besides learning to recognize and produce the phoneme, learn to hear and say the two allophones of /ŋ/, namely, [ŋ] and [ŋ*].

The Phoneme /w/

This sound is a phoneme in Farsi, but its distribution is very limited - it occurs only after /o/. In English it occurs in all positions, functioning as both onglide and offglide. Here, therefore, we are faced with two problems: (1) Since /w/ exists as an offglide in Farsi, Farsi speakers may not find it difficult to recognize or produce the offglide in the English diphthongs /ow uw aw/. (2) But they may be expected to have trouble with /w/ as an onglide for it does not exist in Farsi.

The nearest phonetically similar sounds to the English onglide /w/ in Farsi are /b/ and /v/. Therefore Farsi speakers may be expected to substitute /b/ or /v/ for /w/. A word like wine may appear as /bayn/ or /vayn/.

In actual observation of the speech of Farsi speakers learning English it is noticed that /v/ tends to be substituted

most of the times.

The phoneme /w/ has three allophones, which present difficulties at the phonetic level. But as the allophones are conditioned by the preceding or following vowels, they may present no problems once the vowels have been taught.¹

2. Problems with sounds that have comparable, phonetically similar counterparts in Farsi. The rest of the English consonants present no phonemic problems to the Iranian learners of English since, as we said before, they are either identical with or phonetically similar to Farsi phonemes. The allophonic variations of these phonemes are not in many cases similar to those in Farsi. Neither are they similarly distributed. So they are the source of a number of phonetic problems that should not be disregarded. If they are disregarded, our students will come up with a Farsi accent. They may, for example, pronounce the word seek with a strongly aspirated palatalized /k/, which will not sound like the pronunciation of a native speaker.

The tables below summarize the distribution of the allophones of the English and Farsi consonants, thus enabling

¹Some teachers report that they have heard some of their Farsi-speaking students pronounce words like advice as /adways/. The error may be due to hypercorrection - students trying to correct themselves may overdo it and pronounce all the /v/ sounds as /w/ - or otherwise these students spoke a different dialect of Farsi. In Kurdish, for example, there is the sound /w/. Kurdish speakers say /awwal/ instead of /avval/.

us to see their similarities and differences in quality and distribution.

TABLE 9
THE PHONEME /p/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[p']	initial; medial before stressed vowels; final free variation with [p']	[p']	initial; medial; final.
[p']	final in free variation with [p'] and before stops.	[p']	before stops.
[p]	medial before unstressed vowels, and consonants		
[P]	after /s/		

Similarities: (1) English [p'] and [P'] are similar to Farsi [p'] and [P']. (2) English and Farsi [p'] are similarly distributed though in medial position the English [p'] has to be followed by a stressed vowel. (3) Both English and Farsi [p'] occur before stops.

Differences: (1) English has two allophones that Farsi lacks. To put it more precisely, where English has [p'] and [p] and [P] in medial position, Farsi has only [p'].

(2) Distribution of [pʰ] is different. English [pʰ] occurs finally. Farsi [pʰ] does not.

Problems: (1) To hear and produce the English [pʰ] before unstressed vowels; (2) to hear and produce the English [P] after /s/; (3) to hear and produce [pʰ] in final position, though this can be ignored because if he does not produce [pʰ], he will produce [pʰ], which is in free variation with [pʰ].

TABLE 10
THE PHONEME /b/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[^b b]	initial	[_^ bʰ]	before vl. stops
[b]	medial	[bʰ]	before vd. stops and nasals
[^b b]	final in free variation with [bʰ]	[_^ b]	final
[bʰ]	before stops; final	[b]	other positions

Similarities: (1) English [b], [bʰ], and [^bb] are similar to Farsi [b], [bʰ], and [_^b] respectively. (2) The distribution of [b] and [^bb] in English is the same as that of [b] and [_^b] in Farsi. (3) Both English and Farsi [bʰ] occur before stops.

Differences: English [b̥] has an initial voiceless onglide. The initial Farsi [b] is voiced throughout.

Problems: The difference is so slight that it can be disregarded. The phoneme /b/ constitutes no phonetic problems.

TABLE 11
THE PHONEME /t/

English		Farsi	
Allo-phones	Distribution	Allo-phones	Distribution
[t']	initial; medial before stressed vowels; final in free variation with [t']	[t']	initial; medial; final
[t'']	final; before stops	[t'']	before stops; final postconsonantal in free variation with [t']
[t]	medial before unstressed vowels and consonants		
[T]	after /s/		

Similarities: (1) English [t'] and [t''] are similar to Farsi [t'] and [t'']. (2) English and Farsi [t'] and [t''] are similarly distributed.

Differences: (1) English /t/ is apico-alveolar; Farsi /t/ is dental. (2) English has two allophones that Farsi lacks. (3) Distribution of [tʰ] is different. In English it occurs finally; in Farsi it occurs finally postconsonantal.

Problems: (1) To hear and produce [t] before unstressed syllables; (2) to recognize and produce an apico-alveolar /t/ sound; (3) to hear and produce [T]; (4) to hear and produce [tʰ] postvocally in final position, though this can be ignored because if the Farsi speaker doesn't produce [tʰ], he will produce [tʰ], which is in free variation with [tʰ].

TABLE 12
THE PHONEME /d/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[^d d]	initial	[_ˆ dʰ]	before vl. stops
[d]	medial	[dʰ]	before vd. stops
[d ^d]	final	[_ˆ d]	final
[dʰ]	before stops	[d]	other positions

The patterns here are exactly like that of /b/. Here,

too, there is the problem of the recognition and production of the initial voiceless onglide in [^hd], a quality which can be disregarded since it is not noticeable. In addition there is a difference in the point of articulation of the two phonemes - in English it is apico-alveolar; in Farsi it is dental. This difference cannot be disregarded. Therefore, the problem presented here is to recognize and produce an apico-alveolar /d/ sound.

TABLE 13
THE PHONEME /k/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[k ^h]	initial; medial before stressed vowels; final in free variation with [k ^h]	[k ^h]	initial; medial; final -- all before back vowels
[k ^h]	before stops; final	[k ^h]	before front vowels; final
[k]	medial before unstressed vowels	[k ^h]	before [k ^h]
[K]	after /s/	[k ^h]	before [k ^h]
	There are front and back allophones		

Similarities: (1) English and Farsi [k'] and [k''] are alike. (2) The distribution of [k'] is the same in both languages. (3) The English and Farsi back allophones are similar.

Differences: (1) The Farsi fronted allophone is palatalized; the English fronted /k/ is not palatalized. (2) The English /k/ has two allophones that Farsi does not have. (3) [k''] does not occur in final position in Farsi.

Problems: (1) To recognize and produce a velar fronted /k/ rather than a palatalized one before front vowels and in final position; (2) to recognize and produce the English allophones [k] and [K]; (3) to produce the English [k'] before consonants and in final positions.

TABLE 14
THE PHONEME /g/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[⁹ g]	initial	[g]	before back vowels
[g]	medial	[g _ɣ]	final
[g ⁹]	final	[g _ɣ]	before front vowels
	There are front and back allophones.		

Similarities: (1) Farsi [g] and English [g] are similar before back vowels. (2) Both English and Farsi have a voiceless allophone in final position.

Differences: (1) Farsi /g/ is palatalized before front vowels; English /g/ is only fronted. (2) Farsi /g/ is palatalized finally; English /g/ is not: it is either fronted or retracted depending on the preceding vowel. (3) English [ʔg] has an initial voiceless onglide; Farsi does not.

Problems: (1) To hear and produce a fronted velar /g/ rather than a palatalized one before front vowels and in final position; (2) to hear and produce the initial voiceless onglide in [ʔg].

TABLE 15
THE PHONEME /f/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[f]	all positions	[f]	before or after front vowels
		[f̥]	before or after back vowels

This phoneme constitutes no problem since in English too there are rounded and unrounded varieties of /f/ conditioned

by the following or preceding vowels, though the English /f/ has not been analyzed this way.

TABLE 16
THE PHONEME /v/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[^v v]	initial	[_v]	before or after back vowels
[v]	medial	[v]	before or after front vowels
[v ^v]	final	[_v]	final post-consonantal

Similarities: (1) English /v/ has rounded and unrounded allophones although it has not been analyzed this way. (2) In medial position English [v] is similar to Farsi [v]. (3) Farsi has a voiceless allophone which is similar to the English [v^v].

Differences: (1) English [^vv] begins with an initial voiceless onglide; Farsi /v/ is fully voiced. (2) Farsi /v/ in final post-vocalic position is not accompanied by the final voiceless offglide.

Problems: The problem presented here is to recognize and produce the onglide and offglide in [^vv] and [v^v]. If

the latter allophone, that is, [v^x] occurs in final pre-consonantal position, there is no problem.

TABLE 17
THE PHONEME /s/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[s]	all positions	[s̄]	before or after back vowels
		[s]	before or after front vowels

English /s/ has rounded and unrounded allophones too. The only difference here is that /s/ is a groove in English; it is a slit in Farsi. However, as the difference in the quality of the sound is not noticeable, we can just as well say that the phoneme /s/ constitutes no phonetic problem for Farsi speakers learning English.

TABLE 18
THE PHONEME /z/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[^z z]	initial	[z̄]	before or after back vowels

TABLE 18

THE PHONEME /z/ (Cont'd.)

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[z]	medial	[z]	before or after front vowels
[z ^ʔ]	final	[z̤]	final post-consonantal
		[z̥]	final post-consonantal

Similarities: (1) In English, too, /z/ has rounded and unrounded allophones, though it has not been analyzed this way. (2) In medial position English [z] is similar to Farsi [z]. (3) In final post-consonantal position Farsi [z̤] or [z̥] are like English [z^ʔ].

Differences: (1) English /z/ is a groove. Farsi /z/ is a slit. (2) English has a voiceless onglide and a voiceless offglide in initial and final positions respectively.

Problems: (1) To recognize and produce a groove instead of a slit /z/; (2) to recognize and produce the initial onglide and the final offglide in [z̤z] and [z^ʔ]. In final post-consonantal position [z^ʔ] presents no problem. Neither of these problems is serious. They can be disregarded.

TABLE 19

THE PHONEME /š/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[š]	all positions	[š]	all positions

The only difference between the two phonemes is that the English /š/ is a groove whereas Farsi /š/ is a slit. Since the difference between the two sounds is not quite noticeable, we may just as well say that the phoneme /š/ constitutes no problem for the Farsi speaker learning English.

TABLE 20

THE PHONEME /ž/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[ž]	medial	[ž]	all positions
[ž̤]	final		

There are two differences between the phoneme /ž/ in English and in Farsi: (1) English /ž/ is a groove; Farsi /ž/ is a slit. (2) English [ž̤] is accompanied by a final voiceless offglide.

Since these differences are not quite noticeable due to the acoustically similar quality of the sounds in the two languages, we may just as well conclude that the phoneme /ʒ/ constitutes no problems for the Farsi speaker learning English.

TABLE 21
THE PHONEME /ʒ/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[tʲʒʰ]	initially; medially	[tʲʒʰ]	all positions
[tʲʒ]	medial before un- stressed vowels and finally	[tʲʒ]	before /ʒ/

Similarities: (1) English and Farsi both have aspirated allophones. (2) English does not have the unreleased allophone that Farsi does.

Differences: The English allophone [tʲʒʰ] is not found in Farsi. Therefore students might substitute their aspirated /ʒ/ throughout.

Problems: The problem presented here is to recognize and produce the English allophone [tʲʒ] medially before unstressed vowels, and finally.

TABLE 22
THE PHONEME /j/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[d ^h _y ^h]	initial and medial	[d _y ^h]	initial and medial
[d ^h _y ^h]	final	[d _y ^h]	final
		[d _y ^h]	before /j/

This phoneme constitutes no problem because the allophones in the two languages are similar and similarly distributed. The unreleased allophone in Farsi causes no problem in English.

TABLE 23
THE PHONEME /m/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[m]	initial and medial	[m]	all positions
[m [*]]	final	[m _^]	final after vl. consonants

Similarity: English [m] and Farsi [m] are the same.

Differences: (1) English has [m^{*}]; Farsi has not.
 (2) Farsi has [m̱]. In English /m/ never occurs after voiceless consonants in final position. Therefore, the presence of [m̱] in Farsi is insignificant.

Problems: The only problem presented is to hear and produce the long allophone of /m/, that is, [m^{*}] in final position.

TABLE 24
 THE PHONEME /n/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[n]	initial and medial	[n]	all positions
[n [*]]	final	[ṉ]	final before vl. consonants

The patterns here are exactly like those in /m/. There is the problem of the recognition and production of English [n^{*}]. However, there is another difference, and that is the English /n/ is apico-alveolar whereas the Farsi /n/ is apico-dental. Therefore, we have the additional problem of recognizing and producing an apico-alveolar nasal rather than an apico-dental one, though the two sounds are acoustically similar.

TABLE 25
THE PHONEME /l/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[l]	initial	[l]	all positions
[l _x]	medial	[l̤] ^	final before vl. consonants
[l̤]	final		

Similarities: English /l/ and Farsi /l/ are both laterals.

Differences: (1) English /l/ is apico-alveolar; Farsi /l/ is apico-dental. (2) English has a velarized allophone -- [l_x]; Farsi has not. (3) The velarized allophone is long in final position. (4) Farsi has a voiceless allophone that does not occur in English.

Problems: (1) To hear and produce an apico-alveolar /l/; (2) to hear and produce the velarized allophone -- [l_x]; (3) to hear and produce the long velarized allophone [l̤].

TABLE 26
THE PHONEME /r/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[ɹ]	prevocalic	[r̃]	initial, post- consonantal
[ɹ̃]	postvocalic	[r̃̃]	final
		[r̃̃̃]	intervocalic

There is no similarity between the allophones of the two phonemes. Therefore the problem here is to produce and recognize both of the English allophones.

TABLE 27
THE PHONEME /y/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[ĩ]	before or after high vowels	[y]	all positions
[Ĩ]	before or after mid vowels		
[ẽ]	before or after low vowels		

The English phoneme /y/ has been analyzed differently from the Farsi /y/. English /y/ has been analyzed as glide. Farsi /y/ has been analyzed as consonant. Therefore, no specific comparison can be made between the two.

The reason why Farsi /y/ has been analyzed as consonant is that it has more of the qualities of consonants than of vowels -- The front of the tongue is high in the mouth, and it almost touches the palate. This is true especially when /y/ occurs post-vocalically after /e a > /.

The only problem here is to teach our students to recognize and produce the three allophones of English /y/.

TABLE 28
THE PHONEME /h/

English		Farsi	
Allo- phones	Distribution	Allo- phones	Distribution
[h̥]	before or after high vowels	[h]	all positions
[h̄]	before or after mid vowels		
[h̄̄]	before or after low vowels		

The English phoneme /h/ has also been analyzed differently. It has been analyzed as glide whereas Farsi /h/

has been analyzed as consonant. Therefore, we cannot compare them specifically.

Farsi /h/ is a voiceless fricative with audible friction noise. English /h/ has less friction. This does not make a big difference in the quality of the sound when it occurs as onglide, as in hat, mahogany. But when it occurs as offglide it may cause trouble. Items like dare [dEəð̥] may appear as [dEh̥] when pronounced by Farsi speakers. (If they miss hearing the glide, they may pronounce it as [dE̥]).

The problem here is to teach our students to recognize and produce the three offglide allophones of /h/ in English.

3. Problems with consonant clusters. The possibilities of combination of consonants in clusters in English are:

TABLE 29

POSSIBILITIES OF CONSONANT CLUSTERS IN ENGLISH

initial	medial	final
CC	CC	CC
CCC	CCC	CCC
	CCCC	CCCC ¹

¹Table taken from: W. Slager and W. Lehn, "The Contrastive Study of Egyptian Arabic and American English: The Segmental Phonemes," Language Learning, IX, 1-2 (1959), pp. 110-118.

In Farsi the possibilities are:

TABLE 30
POSSIBILITIES OF CONSONANT CLUSTERS IN FARSI

initial	medial	final
none	CC//C	CC

The comparison of the two charts immediately tells us that Farsi speakers learning English may be expected to have great trouble learning to recognize and produce the English consonant clusters.

In initial position Farsi has no consonant clusters. Therefore our learners may insert a vowel or vowels in the English utterances beginning with consonant clusters. When initial two-segment clusters occur in English, the possibility of error is VC//C or CVC. For example, the word spelling may appear as /es-pe-lin/ or /se-pe-lin/. When initial three-segment clusters occur, the possibilities of error are: VC//CV//C or CVCVC or VCC//C. For example, a word like spray may appear as /es-pe-rey/, /se-pe-rey/, or /esp-rey/.

In my experience I have never noticed the students add an initial vowel to the English clusters except to those which begin with /s/. This may be partly because the letter <s> is pronounced /es/; and the letter <p>, /piy/.

In the
writer's
experience

In final position there are some two-segment clusters that are found in both languages. These constitute no problems. There are some in Farsi that do not exist in English, and therefore they may be transferred to English. For example, there are no final clusters in English made up of a voiced stop plus a voiceless spirant, for example, /ds/. Farsi has this one. And as it does not have the sequence /dz/, Farsi speakers may pronounce the word adds as /æ ds/. This will constitute a whole range of problems with third person verbs like adds as well as with plurals like pads.

If final two-segment consonant clusters are not found in Farsi, the possibilities of error are: (1) to insert a vowel in between, (2) to change it to the nearest Farsi pattern. For example, /dz/ is not found in Farsi. Therefore, a word like beds may appear as either /beds/ or /be-dez/.

Three-segment consonant clusters present a more serious problem since they are not found in final position in Farsi. The possibilities of error here are: C//CVC or CVCC. For example, a word like worked may appear as /wor-ked/ or /wo-rekt/.

The most serious problems are presented by final four-segment consonant clusters. The possibilities of error are: C//CVCC or CC//CVC or C//CVCVC. For example, a word

like glimpsed may appear as /glim-pest/, /glimp-set/ or /glim-pe-set/.

In medial position English consonant clusters are the same as in final position.¹ However, in studying them we will inescapably be involved in the problem of juncture, which is beyond the scope of this thesis. We are not going to deal with them here. The partial analysis of Farsi medial consonant sequences has been presented so that we may be able to predict the kinds of error that could be expected to be made by Farsi speakers learning English.

C. Summary

An examination of the problems discussed in this section reveals that Farsi speakers learning English may be expected to have the following problems with the segmentals of English.

Problems with phonemes for which there are no comparable phonetically similar sounds in Farsi. These are:

1. Recognition and production of /a ə/
2. " " " " /e ɛ ɪ/ and the onglide /w/
3. Recognition and production of /ay ɔy aw/
4. " " " " the allophones of the above phonemes.

¹See Table 29.

Problems with phonemes for which there are comparable, phonetically similar sounds in Farsi. These either present phonemic or phonetic problems. Phonemic problems are marked with (**). The rest, which are phonetic problems, are either serious or not serious. Serious phonetic problems are marked with one (*). Those that are left unmarked are considered not serious and can, therefore, be disregarded.

**1.	Recognition and production of the English [I] and [I*]
2.	" " " " " " [E*]
*3.	" " " " " " /æ/
4.	" " " " " " [æ*]
**5.	" " " " " " [U] and [U*]
*6.	" " " " " " rounded /ɔ/
**7.	" " " " " " /iy/
**8.	" " " " " " /uw/
9.	" " " " " " lenis [P] and fortis [p]
10.	" " " " " " [^b b]
*11.	" " " " " " apico-alveolar /t/
12.	" " " " " " lenis [T] and fortis [t]
*13.	" " " " " " apico-alveolar /d/
14.	" " " " " " [^d d]
*15.	" " " " " " velar /k/
16.	" " " " " " lenis [K] and fortis [k]
*17.	" " " " " " velar /g/

18.	Recognition and production of the English	[⁹ g]
19.	" " " " " "	groove /s/
20.	" " " " " "	groove /z/
21.	" " " " " "	[^z z] and [z ^z]
22.	" " " " " "	[^z z]
23.	" " " " " "	fortis [t ^y ʒ]
24.	" " " " " "	[m [*]]
*25.	" " " " " "	apico-alveolar /n/
26.	" " " " " "	[n [*]]
27.	" " " " " "	apico-alveolar /l/
28.	" " " " " "	[l _x] and [l _x [*]]
*29.	" " " " " "	/r/
*30.	" " " " " "	/y/ as offglide
*31.	" " " " " "	/h/ as offglide
*32.	" " " " " "	consonant clusters

More specifically, problems with consonant clusters

are:

- a. Recognition and production of all initial clusters, some of which may constitute phonemic problems. For example, Farsi speakers may pronounce drive as derive.
- b. Recognition and production of many final two-segment clusters.
- c. Recognition and production of all final three- or four-segment consonant clusters.

D. Order of Presentation

Now that we have a list of the pronunciation problems Farsi speakers may encounter, we may decide in what order we are going to teach these problems.

"The two main criteria for ordering pronunciation points are frequency of occurrence and ease (or difficulty) of articulatory approximation by the ... learner."¹ Therefore, we have to proceed from the easiest and most frequent to the hardest and least frequent - an order which, besides being logical, gives the learners a sense of achievement.

Assuming that pronunciation practice has to be part of an integrated course in language, we cannot wholly depend on the above criteria since the order also depends on the selection of the vocabulary for the course. There are also other factors that may make us change the assumed order in the course of preparing the pronunciation materials. For example, it is better to teach /i/ and /iy/ together though /i/ is much more frequent and probably more difficult to establish than /iy/ (see chart below). These, however, cannot be considered here, so we have for the time being to depend on the two main criteria cited above.

The following table shows the frequency of occurrence

Chatman, "Some Problems in Teaching English Pronunciation to Persian Speakers", p. 38

of English phonemes.¹

TABLE 31

FREQUENCY OF OCCURRENCE OF ENGLISH PHONEMES

The Vowels and Diphthongs		The Consonants	
I	8.53%	n	7.24%
ə	4.63	t	7.13
æ	3.95	r	6.88
ɛ	3.44	s	4.55
ɒ	2.81	d	4.31
ʌ	2.33	l	3.74
i	2.12	θ	3.43
e, eI	1.84	z	2.97
u	1.60	m	2.78
aI	1.59	k	2.71
oU	1.30	v	2.28
ɔ	1.26	w	2.08
ʊ	0.69	p	2.04
aU	0.59	f	1.84
ɑ	0.49	h	1.81
o	0.33	b	1.81
ju	0.31	ŋ	0.96
ɔI	0.09	ʃ	0.82
		g	0.74

¹Table taken from: George A. Miller, Language and Communication (McGraw Hill Co., 1963), p. 86.

TABLE 31

FREQUENCY OF OCCURRENCE OF ENGLISH PHONEMES (Cont'd.)

The Vowels and Diphthongs	The Consonants	
	j	0.60
	tʃ	0.52
	dʒ	0.44
	θ	0.37
	ʒ	0.05

The total percentage of the occurrence of the vowels and diphthongs is 38%; that of the consonants is 62%.

With reference to this table we can order our phonemic problems according to their frequency of occurrence. The order is /i ə ð a iɪ w uɪ aɪ ŋ u aʊ θ ɔɪ/.

And this table shows the frequency of occurrence of syllables in English.¹

TABLE 32

FREQUENCY OF OCCURRENCE OF SYLLABLES IN ENGLISH

CVC	33.5%	CVCC	7.8%
CV	21.8	VCC and CCVC	2.8
VC	20.3	CCV	0.8
V	9.7	CCVCC	0.5

¹Ibid., p. 88.

The table shows that in English final two-segment clusters are more frequent than initial two-segment clusters. Also that CCVCC combinations, which are presumably more difficult to pronounce than VCC or CVCC combinations, are infrequent.

The table does not show any of the three- or four-segment consonant clusters, but we can guess that these are not very frequent in English.

As for the ease or difficulty of articulatory approximation by the learner, we have to depend partly on the results of the analysis and partly on our own estimation so long as we have not experimented with the problem sounds.

Below is a general outline of the order of presentation of English segmentals to teach Farsi speakers. This is only a suggestion and by no means final.

1. Teach the sounds that present no problems or only insignificant phonetic problems -- /b p f v s z š ž č ĵ m h (onglide) e ow/. Include some of the most frequent problem sounds -- /i iy ə ə/. Also include some of the final two-segment clusters that are found in Farsi too.
2. Teach the sounds that present phonetic problems -- /k g t d l n y (offglide) h (offglide) æ >/. Include some of the problem sounds -- /a w uw u ay/. Also include some more final two-segment clusters that are found in Farsi.

3. Teach the rest of the phonemic problems -- /ŋ aw
θ >y/. Also include some final two-segment
clusters that are not found in Farsi.
4. Teach initial two-segment consonant clusters.
5. Teach final three-segment consonant clusters.
6. Teach initial three-segment consonant clusters.
7. Teach final four-segment clusters.

CHAPTER IV

SAMPLE LESSONS

Pronunciation is a two-fold process. It involves aural receptivity or the recognition of sounds as well as the actual production of sounds.¹

This statement is in accord with the fact mentioned by Lado:

The speaker of one language listening to another does not actually hear the foreign language sound units -- phonemes. He hears his own. Phonemic differences in the foreign language will be consistently missed by him if there is no similar phonemic difference in the native language.²

Therefore, we have first to help the students hear the new sound and then make them say it. This is the procedure that modern teachers of language follow.

Modern teachers teach by contrast. For example, they teach /p/ in contrast with /b/ and not by itself. They do so for two reasons: (1) /p/ is a phoneme in English not by virtue of its point or manner of articulation but by virtue of its contrast with /b/; and (2) contrast helps the

¹Lado and Fries, English Pronunciation, p. iii.

²Lado, Linguistics Across Cultures, p. 11.

students differentiate between the familiar and the new sounds. In this section we follow the same procedure except where there is no possibility or necessity for contrast.

Techniques that have been developed for the teaching of segmental sounds aim at (1) aiding recognition of the problem sounds; (2) aiding production of the problem sounds; and (3) drilling to make production automatic.¹

1. Aid in recognition of the problem sounds. There is more than one way to help the students recognize the new sounds.

- a. Articulatory explanation (preferably from a face diagram). This has to be short, clear-cut and free from complicated technical terms that students cannot understand. For example, instead of saying /t/ is an apico-alveolar sound, the teacher had better say, "to pronounce the English sound /t/ let the tip of your tongue touch your gum-ridge".

¹The general techniques of teaching pronunciation discussed in this chapter have been taken from: (a) Richard Yorkey, Pronunciation Practice (Beirut: American University of Beirut, 1962); (b) Richard Yorkey, A Study of the Practical Application of Structural Linguistics to the Teaching of English in Lebanese Elementary Schools, a Doctoral Dissertation (The University of Michigan, 1959); (c) Betty J. Wallace, The Pronunciation of American English (Ann Arbor, The University of Michigan Press, 1957); (d) unpublished mimeographed materials distributed by Dr. Richard Yorkey for the teaching of pronunciation in Education 221-222E.

- b. Comparison with the sounds of the native language. If we substitute the native sound for the foreign language sounds, the pronunciation may sound different to the native speaker and he may thus be aided in recognizing the foreign sound. For example, the teacher may pronounce the Farsi palatalized /k/ and English velar /k/ when they occur before front vowels as in the words <ک> = /ki/ and key. If the teacher pronounces these successively, the students may hear a difference. Then the teacher compares the two sounds by explaining the difference.
- c. Exaggeration of the new sound by the teacher. For example, he may pronounce a retracted /k/ even before front vowels. The teacher, however, should be careful not to distort the sounds.
- d. General practical suggestions with references to the students' experience.¹ For example, in teaching /ŋ/ to Farsi speakers the teacher may refer them to the conventional representation of a new-born baby's cry² - Farsi speakers conventionally

¹Not many teachers have considered such practical suggestions in teaching pronunciation. These can be helpful for they are related to the students' experience.

²Such references **have** to be given within the framework of the source language since the same signal may be represented differently in different languages. For example, while in Farsi a baby's cry is represented by [ŋæ] or [ŋæ], in English it may be represented by [wæ].

imitate a new-born baby's cry by producing a velar nasal followed by [æ] or [qæ], that is [ŋæ] or [ŋqæ]. In teaching the sound /e/ he may refer them to a person who lisps. In teaching the sound /æ/ he may refer them to the way they conventionally imitate the bleating of a young lamb; etc. Some such references have been given in the sample lessons that follow.

- e. Identification of the new sound or sounds or clusters by the students. This is actually a way of testing the learners' recognition. The teacher pronounces words from columns he has numbered; the students tell which column the words belong to.

2. Aid in production. After the teacher has given the students drills and helped them recognize the new sounds, he can help them produce the sounds in one or two ways.

- a. Repetition in unison. The teacher provides a model; the students repeat after him, imitating as closely as they can. This will help them overcome their inhibition, and prepare them for individual repetition.
- b. Repetition individually. Individual students are asked to repeat after the teacher. This is necessary since the weaker students may just repeat

following the lead of the clever ones. We have to make sure that all the students respond correctly.

c. Production by individuals. This is a way of testing production. The teacher points to words in different columns; individual students pronounce them.

3. Aid in making production automatic. There are some ways to drill the problem sounds with the purpose of making the students produce them automatically.

a. Repetition of the contrastive sounds in larger units. Each lesson has to provide sentences and phrases emphasizing one or the other or both of the contrastive sounds. This is because "in some cases individual sounds are pronounced easily but sequences of sounds prove difficult Sounds are not produced in static positions of the vocal mechanism but are the results of a series of fluid muscle movements".¹ The order of presentation of the phrases and sentences had better be (1) those containing the easier sound, (2) those containing the harder sound, (3) those containing both of the sounds emphasized in them.

Pike, Phonemics, p. 70.

- b. Constant review. Once one sound has been taught, it has to be included in the next lesson or lessons. The teacher has to be ready for quick spontaneous review of sounds when they come up. He may also want to prepare review lessons every now and then.

There is need for inclusion of the suprasegmental features of English in our lessons.

The tripod of language, the sounds, intonation, and rhythm, must be included in any teaching materials. Pike aptly describes the importance of all the three 'legs' of pronunciation, signifying that without one of these elements the entire 'tripod' will collapse; that is, the pronunciation as a whole will not be accurate.¹

There is need, of course, for a contrastive analysis of the suprasegmentals of Farsi and English with a view towards the systematic presentation of English suprasegmentals; but so long as such an analysis has not been made, we will make sure to teach our students to distinguish between three degrees of stress -- primary, secondary, weak -- and three intonation contours -- /2-3-1/, the intonation of statements, requests, and questions with what, where, who, etc.; /2-3-2/, the intonation of unfinished utterances; /2-1-3/, the intonation of questions beginning with auxiliaries.

¹Betty Wallace, Pronunciation of American English, p. 1.

A. Lesson on /θ/

On the previous pages we have ascertained that the recognition and production of the voiceless interdental sound /θ/ is one of the phonemic problems and has to be taught carefully.

We also stated that in theory and practice Farsi speakers learning English substitute their native sounds /s/ or /t/ where /θ/ occurs in English. Therefore, we can teach this sound in contrast with either of the two. Below is a lesson to teach /θ/ in contrast with /s/. Another lesson can be prepared to teach it in contrast with /t/.

This lesson aims at enabling the students to recognize the sound /θ/, to differentiate between /θ/ and /s/, and to produce the sound /θ/.

Here are the steps to be taken:

1. Recognition of the sound /θ/.
 - a. The teacher starts by asking students whether they have ever heard anyone 'lisp'. (They are very likely to have heard someone lisp.) Then he begins to imitate a person who lisps. He chooses a phrase or sentence with a number of /s/ sounds in it and pronounces it, replacing all /s/ sounds with /θ/. The students may hear the sound /θ/ as being different from /s/. Another example that can help the Farsi speaker

recognize this new sound is to mention a sub-dialect of Tehran whose speakers substitute the Farsi /s/ sounds with /θ/. Instead of saying /hasán/, they say /haθán/. Students are likely to have heard these people speak and probably noticed the shift of /s/ to /θ/.

- b. The teacher explains how a person happens to lisp (or how the speakers of the sub-dialect happen to say /θ/ for /s/). He puts his tongue between his teeth, letting the breath stream escape forcibly through a narrow slit-like opening between the tongue, and the upper teeth.

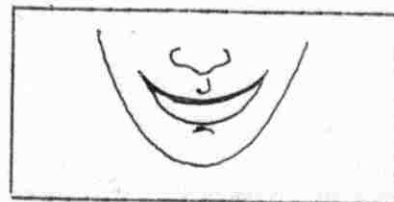
The teacher adds that Farsi words with /s/ in them will not change their meaning if the /s/ sounds are pronounced /θ/. The word <سرد> = /sard/, which means cold, will keep its meaning if it is pronounced /θard/.

- c. The teacher now refers to an illustrated minimal pair, explaining to the students that if the two sounds were used interchangeably in English, there would be a difference in meaning. He presents the illustrated contrast between mouse and mouth.



mouse

The mouse is big.



mouth

The mouth is big.

- d. He asks the students to listen to him while he pronounces the following minimal pairs. He pronounces them in this order: (1) column 1, (2) column 2, (3) columns 1 and 2 alternately.

1	2
sink	think
sank	thank
sin	thin
sought	thought
some	thumb
sick	thick
sing	thing
sigh	thigh
saw	thaw
symbol	thimble
pass	path
miss	myth
worse	worth
mouse	mouth
use /yuws/	youth
force	forth
tense	tenth
face	faith

- e. The teacher now pronounces words from either of the two columns and the students tell which column

the words belong to. The students may answer in unison first; individually next. For example,

Teacher : saw
Students : 1
Teacher : thaw
Students : 2 ; etc.

2. Production of /ə/.

- a. The students repeat, after the teacher, the words in column 1, column 2, columns 1 and 2 alternately. The teacher gives them directions concerning the point and manner of articulation of /ə/ when they come to column 2 - "Put your tongue between your teeth. Now try to say /s/", the result of which will be /ə/.

In order to make sure that the student can differentiate between the two sounds, the teacher asks individual students to pronounce the words he points out.

- b. Now the teacher moves on to practice these sounds in sentences in order to make the production of the sound automatic. It is suggested that they be used in the order recorded.

1) Sentences with /s/ in them.

Sister Suzi's sewing a dress.

Lucille, you always spoil the soup.

Sister Sara can sing a song.

The Mississippi is in the U.S.A.

See what he says. He says I look silly.

He says the sun sets in the East.

2) Sentences with /ə/ in them.

I thought your thumb was hurt.

I think money means everything to him.

Thank you for the things you showed me.

Thursday night we are going to my theatre.

Thin paper is better than thick paper.

A thorn pricked my thumb.

3) Sentences with both /s/ and /ə/ in them.

The baby was sucking her thumb.

Think before you say something.

They used to think the sun went around the earth.

My third son lives in the South.

I don't think so.

Thank you, **sir**.

B. Lesson on /i/ and /iy/

These sounds present problems to Farsi speakers learning English. According to our discussion on the preceding pages, Farsi speakers may produce the English /i/ easily if it occurs in unstressed position. But if it is stressed, they may substitute the Farsi allophone [I•]. The Farsi [I•] may also be

substituted for /iy/.

This lesson aims at enabling the Farsi speaker to recognize and produce the English /i/ and /iy/. It consists of three parts: (1) Recognition and production of /i/, (2) Recognition and production of /iy/, (3) Contrast of /i/ and /iy/.

1. Recognition and production of /i/.

a. We can teach this sound with reference to the short allophone of /i/, that is, [I]. The teacher pronounces a word like <سبیل> = /sibíl/ while the students listen. He draws their attention to the fact that the sound in the first syllable is short; in the second syllable it is long. He does not say [sI'-bÍ'1], he says [sI-bÍ'1]. He may give more than one example such as <کلید> = /kilíd/, <بیل> = /bilít/, etc., and then pronounce the two sounds successively -- [I I' I I' I I'] or [I I I I I' I' I' I'].

b. Now he draws the students' attention to the following words. The teacher emphasizes that the /i/ sound in these words is short, disregarding for the moment the difference in length between the /i/ sounds followed by voiced consonants and those followed by voiceless ones.

bid, bit, kid, kit, rid, writ, hid, hit,
tin, din, bin, sin, chin, shin, sid, sit,
itch, pitch, rich, it.

- c. He asks the students to repeat after him, again emphasizing that they have to keep the /i/ short.
- d. Now he asks the students to repeat the following phrases and sentences. There are three sets. First set contains the English /i/ in unstressed position, second contains it in stressed position, third in both stressed and unstressed position.

1) Phrases with unstressed /i/ in them.

In the house.

In this land.

With a smile.

Without it.

His father.

It's a book.

Will you tell him?

It isn't right.

Is Tom coming?

Talk in Arabic.

2) Phrases with stressed /i/ in them.

I think so.

I'll kill Tom.

You're a kid.

Look at Bill.

Bill is ill.

Can you knit?

Hit and kick.

Bring the bill.

I've no interest.

They know little.

3) Phrases with stressed and unstressed /i/

It's very interesting.

It's very big.

It's bitter.

It's a trick.

I'll kill him.

The baby can sit.

Dad's in the kitchen.

Animals can't think.

Tell him to sit.

The place is lit.

2. Recognition and production of /iy/.

- a. This sound can be taught with reference to the Farsi [İ]. The teacher pronounces a word like <بید> = /bid/, indicating that the /i/ is long. It sounds like the English /iy/ in bead, but

there are differences. The Farsi /i/ in /bid/ is only long, but the English /iy/ has a /y/ following the /i/. This /y/ sound makes the sound tense. Also in producing the Farsi /i/ the lips are not wide spread. In English they are wide spread as if one were smiling.

While the teacher tells them about the difference, he demonstrates by pronouncing some of the following words in an exaggerated way. sheep, keep, reap, heap, heat, cheat, seat, seed, lead, lean, need, kneel, peel, leave, achieve, beat, beach, teach, reach, eat, tea, sea.

- b. Now he asks them to repeat the above words after him, emphasizing that they should add the off-glide sound /y/ after /i/ and that their lips have to be spread.
- c. He makes them repeat the following phrases and sentences.

We were at sea.

We had some tea.

Give me a clean sheet.

You mean you should speak.

Eat some beans.

Heat the peas.

Keep the sheep clean.

Leave the seat at the beach.

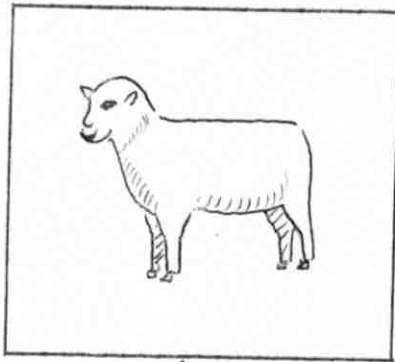
Peel them and eat them.

Teach them and leave them.

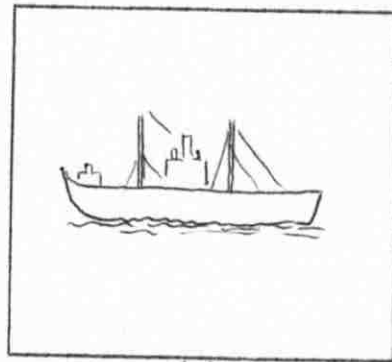
3. Contrast of /i/ and /iy/

After the teacher has made his students recognize and produce each of the two sounds, he will in this part of the lesson contrast the two sounds.

- a. The teacher draws the students' attention to the illustrated minimal pair below. He will explain that the substitution of /i/ for /iy/ or vice versa will make a difference in meaning.



sheep



ship

The sheep is big.

The ship is big.

- b. He summarizes the lesson so far by emphasizing that /i/ is very short, /iy/ is long and tense with spread lips. Then he asks the students to listen while he pronounces the following minimal pairs in the order 1, 2, 1 and 2 alternately.

1	2
heap	hip
leak	lick
seek	sick
seat	sit
sleep	slip
seen	sin
steal	still
read	rid
beat	bit
deed	did
eat	it
eel	ill
wheel	will
steal	still
lead	lid
leave	live
peak	pick
cheap	chip
neat	knit
feet	fit
feel	fill
sheep	ship

c. Then he asks the students to repeat after him in the order 1, 2, 1 and 2 alternately.

- d. Then he practices with the following sentences.
The first set has /iy/ emphasized. The second has /i/ emphasized. The third has both of them.

- 1) Sentences with /iy/ in them. (Use the sentences on page 103.)
- 2) Sentences with /i/ in them. (Use the sentences on page 102.)
- 3) Sentences with both /i/ and /iy/ in them.

This is a peach.

These are pins.

Eat the chips.

Eat in the kitchen.

Please clean the dishes.

Finish the peas.

See Bill.

Teach him to live.

When will he leave?

He'll leave in time.

- e. The memory conversation that follows can be assigned to be memorized by the students.

Student A. "Mr. Wilson is a teacher."

Student B. "He teaches English."

Student A. "Yes, and he's very interesting."¹

¹The conversation reproduced from: Lado and Fries, English Pronunciation, p. 35.

C. Lesson on the Consonant Cluster /st/

Books dealing with pronunciation do not usually pay any attention to problems concerning the numerous consonant clusters in English. The following lesson aims at enabling the students to recognize and produce one of these consonant clusters. If one such consonant cluster as /st/ is taught, then we can give our learners extensive drills on other similar clusters such as /sk/, /sp/, /sl/.

1. Recognition. When Farsi speakers demand silence or want to attract someone's attention without calling him aloud, they produce a hissing sound /ssssss/. The initial sound of the consonant cluster /st/ is like that hissing sound. The teacher draws the students' attention to this fact and asks whether they can produce it. They can produce it since it is a signal in the language.

2. Then the teacher asks them to listen to him while he pronounces the following words exaggerating the initial /s/ sound. For example, he will say ssssteal, sssstand, etc.

steam, steal, stove, starch, stand, stout, stink,
stay, state, stood, stop, stick, steady, study,
stone, stiff, stitch.

3. The teacher explains that if we add an initial /e/ or /i/ to these words they will either change their meaning or the pronunciation will not be like that of a native speaker. For example, the addition of /e/ or /i/ to state and steam

will change them into estate and esteem, which have different meanings from the former two words. He may give the following minimal pairs as recognition drill.

1	2
state	estate
steam	esteem
stern	astern
stir	astir

4. Now he asks the students to repeat the words after him.

5. Then he practices with the following sentences and phrases.

Stick to your word.
Don't stay long.
Don't steal.
You're a good student.
Stand still.
Stop the steam.
United States.
The egg stinks.
Speak Spanish.
I've no star.

Once the teacher has established this one consonant cluster, he can prepare similar materials to teach such clusters as /sk sp sl/ etc. He can also provide mixed drills with all of these clusters in them.

D. Lesson on /k/

The velar allophone of the Farsi /k/ occurs before back vowels. The palatalized allophone of it occurs before front vowels and in final positions. We have to teach our students to recognize and produce a velar /k/ when they speak English. This is the aim of the following lesson.

1. Since there is a velar allophone of /k/ in Farsi, the students must be able to produce it if they are made aware of it. The teacher draws their attention to the pronunciation of some Farsi words in which /k/ occurs before front vowels or finally, for example, /ki key kam pɔk/ = < کی، کمی، کم، پاک > etc. He pronounces them as a Farsi speaker does usually. Then he explains what would happen if the English /k/ were substituted for the Farsi /k/ in these words. Then he pronounces the words as an English speaker learning Farsi might be expected to pronounce them. The students can probably hear the difference.

Then the teacher tells them that a sound similar to the English /k/ is found in Farsi words like /kuh kɔr/ = < کوه، کار > etc., and he emphasizes that the English /k/ is like the /k/ in the two words already mentioned.

2. The teacher explains the articulation of the palatalized /k/ in Farsi and that of the English velar /k/ in terms students can understand.

3. Then he pronounces the following words while the students listen. There are two sets. First set has /k/ before back vowels; second set has /k/ before front vowels and finally.

- a. car, call, could, cooed, caught, court, cool, course
- b. kill, kiss, cat, can, care, cage, rack, pack, sack, rock, shock, sock, walk, talk, kick, sick, tick, week.

4. The teacher asks the students to repeat the words after him making sure that they produce a velar /k/.

5. The teacher asks the students to repeat the following sentences after him.

Can you speak English?

Can you talk to Katy?

He kicked the bucket.

Take care of the sack.

A lock has a key.

The cock is crowing.

The cat's in the kitchen.

The pack is in the sack.

They talk about cars.

The clock says tick tock.

APPENDIXES

A. FARSI SOUNDS IN MINIMAL CONTRAST

How do we know that the 24 consonants and ten vowel phonemes we have identified in Farsi are separate phonemes? We can prove this by showing each sound in contrast with other sounds that are phonetically similar to it, though "There is no orientation to tell us exactly how similar two sounds must be in order for it to be possible for them to be united into a single phoneme".¹ However, there is the fact that "Sounds made by similar types of production movements at similar points of articulation tend to give similar acoustic effects".²

In providing minimal contrast between the sounds in Farsi, an attempt has been made to contrast each sound with as many other sounds correlated to it on the basis of such features of voice, point of articulation, or manner of articulation.³ No attempt has been made to provide contrast between those sounds that are obviously

¹Pike, Phonemics, p. 70.

²Ibid., p. 70.

³For a discussion on the correlation of sounds see: John P. Hughes, The Science of Language (New York: Random House, 1962), pp. 247-248.

different, for example, /x/ and /b/.

Two minimal pairs have been provided for each two sounds thus contrasted. Where minimal pairs could not be found, sub-minimal pairs have been provided.

The following pages show (1) the vowels (2) the consonants in minimal contrast.

1. The Vowels in Contrast

a. High-mid correlation

/i/ and /e/

/qir/ tar /qer/ coquettishness

/pičpič/ spiral-like /pèčpěč/ whisper

/u/ and /o/

/pul/ money /pol/ bridge

/tu/ inside /to/ you

b. Mid-low correlation

/e/ and /a/

/ser/ secret /sar/ head

/jeld/ cover /jald/ well-trained
(said of pigeons)

/e/ and /a•/

/jed/ hard work /ja•d/ blackness
(of hair)

/qer/ coquettishness /qa•r/ bottom

/o/ and /ɔ/

/dor/ a jewel /dɔr/ scaffold

/xol/ crazy; stupid /xɔl/ mole

/o•/ and /ɔ/

/zo•r/ noon /zɔr/ miserable

/to•r/ manner /tɔr/ dark

c. Long-short correlation

/a•/ and /a/

/ba•d/ then; next /bad/ bad

/dà·vǎ/	quarrel	/davǎ/	medicine
/o·/ and /o/			
/mò·sén/	name of a boy	/mosén/	aged; elderly
/dorú/	double-faced; insincere	/dò·rún/	going round (e.g. to collect money)
		/fonún/	techniques
		/tòxmé/	seed

The word /fonún/ shows that the /n/ in /dò·rún/ is not the conditioning factor in deciding the quality of /o·/ or /o/. The word /tòxmé/ shows that stress is not the conditioning factor either.

/e·/ and /e/			
/ʔè·lǎm/	announce	/ʔelǎm/	name of an ancient civi- lization
/fe·l/	verb	/fèlfél/	pepper
		/del/	heart

The word /del/ shows that the extra syllable in /felfel/ is not the conditioning factor in deciding the quality of /e·/ or /e/.

d. Front-back correlation

/i/ and /u/			
/šir/	lion	/šur/	salty
/tir/	arrow	/tur/	net
/e/ and /o/			
/mehr/	love; kindness	/mohr/	seal
/kešt/	sowing	/košt/	killed

/a•/ and /o•/

/ba•d/	next	/bo•d/	distance
/za•r/	poison	/zo•r/	noon

/a/ and /ɔ/

/bad/	bad	/bɔd/	wind
/kard/	did	/kɔrd/	knife

e. Vowel-diphthong correlation

/o/ and /ow/

/hol/	push	/howl/	embarrassed (due to being hurried)
-------	------	--------	--

/qol/	chain	/qowl/	promise
-------	-------	--------	---------

/o•/ and /ow/

/so•b/	morning	/sowb/	clothes
/sò•bó/	in the morning	/sòwdó/	soda water
/bo•d/	distance		

The word /bo•d/ shows that /d/ is not the conditioning factor of /ow/.

/zo•r/	noon	/zòwráq/	boat
		/šowq/	willingness

The word /šowq/ shows that /ow/ occurs in monosyllabic words too.

2. The Consonants in Contrast

a. Voiceless-voice correlation

/p/ and /b/

/pomp/	pump	/bomb/	bomb
--------	------	--------	------

/separ/	shield	/sebar/	triangle
/t/ and /d/			
/tor/	dark	/dor/	scaffold
/k>rt/	card	/k>rd/	knife
/k/ and /g/			
/kalle/	head	/galle/	flock
/nek>h/	marriage	/neg>h/	look
/f/ and /v/			
/fahm/	understanding	/vahm/	imagination
/g>f/	the graphene <گ>	/g>v/	cow
/s/ and /z/			
/sad/	hundred	/zad/	hit (past tense)
/sard/	cold	/zard/	yellow
/š/ and /ž/			
/mošte/	a tool	/možde/	good news
/ruš/	on it	/ruž/	lipstick
/č/ and /j/			
/čang/	lyre	/jang/	war
/č>/	well	/j>/	place

b. Correlation of nasality

/b/ and /m/			
/bor/	load	/mor/	snake
/x>b/	sleep	/x>m/	raw
/d/ and /n/			
/dam/	moment	/nam/	dampness
/xud/	helmet	/xun/	blood

/l/ and /n/

/l̀lé/	tulip	/ǹlé/	groaning
/kol/	whole	/kon/	do

c. Bilabial-dental correlation

/p/ and /t/

/par/	feather	/tar/	wet
/tup/	ball	/tut/	berry

/b/ and /d/

/bɔb/	chapter	/bɔd/	wind
/bɔr/	load	/dɔr/	scaffold

/m/ and /n/

/m̀sí/	a greyish green	/ǹsí/	beginner
/xɔm/	raw	/xɔn/	head of a tribe

d. Affrication

/č/ and /y/

/ček/	check	/yek/	one
/m̀čé/	female donkey	/m̀yé/	background

/j/ and /y/

/jɔ/	place	/yɔ/	or
/j̀rú/	broom	/ỳrú/	the fellow

/š/ and /č/

/š̀né/	comb; shoulder	/č̀né/	chin
/m̀še/	trigger	/m̀čé/	female donkey

/ž/ and /j/

/ž̀éndé/	shabby	/j̀éndé/	prostitute
/žest/	show-off; putting on airs	/jest/	escaped; jumped

/t/ and /č/

/tɔr/	dark	/čɔr/	four
/mɔt/	checkmate	/mɔč/	kiss

/d/ and /j/

/dang/	sound of a bell	/jang/	war
/dɔru/	medicine	/jɔru/	broom
/radɔ/	a kind of cloak	/rajɔ/	hopefulness

e. Dental-alveolar correlation

/l/ and /r/

/lang/	lame; limping	/rang/	colour; paint
/liz/	slippery	/riz/	tiny
/yɔl/	mane	/yɔr/	friend; mistress

/t/ and /r/

/tut/	berry	/tur/	net
/mɔt/	checkmate	/mɔr/	snake

/d/ and /r/

/dang/	sound of a bell	/rang/	paint; colour
/dɔd/	shouting	/dɔr/	scaffold

/n/ and /r/

/nun/	bread	/run/	thigh
/xɔn/	head of a tribe	/xɔr/	thorn

f. Velar-postvelar correlation

/k/ and /q/

/kamár/	waist	/qamar/	moon; name of a girl
/tɔk/	vine tree	/tɔq/	ceiling

/g/ and /q/

/g`ri/

cart

/q`ri/

one who reads
the Koran

/barg/

leaf

/barq/

electricity

B. DIACRITICS

The following are the symbols and diacritics used in this thesis:

- [ː] long. For example, [Iː], [Eː]
- [ʰ] aspirated and released. For example, [pʰ], [kʰ]
- [̚] unreleased. For example, [p̚], [k̚]
- [P] lenis unaspirated release
- [T] lenis unaspirated release
- [K] lenis unaspirated release
- [ɤ] tongue retraction, non-fricative, voiced spirant
- [v] voiced. For example, [t̪v]
- [ʌ] voiceless. For example, [bʌ], [dʌ]
- [^b] voiceless onglide or offglide. For example, [^bb], [^gg], [^zz]
- [y] palatalized. For example, [k_y]
- [x] velarized. For example, [l_x]
- [̤] glide. For example, [I̤], [e̤]
- [̠] retracted. For example, [q̠], [x̠]
- [̡] fronted. For example, [q̡], [x̡]
- [̘] lowered. For example, [a̘]
- [̙] (over the symbol) flapped. For example, [ɹ̙]
- [̣] trilled. For example, [ṛ]
- [] Phonetic transcription
- / / phonemic transcription
- < > graphemic transcription

C consonant

V vowel

S semivowel

- syllable division, For example, /ʔàh-mád/

// pause, either syllable division or juncture.
For example, C//C

// primary stress. For example, /ha-sán/

/ secondary stress. For example, /màh-múd/

/unmarked/ weak stress. For example, /ha-sán/

BIBLIOGRAPHY

- Anthony, Edward M. "On the Predictability of Pronunciation Problems", English Language Teaching, XI, 4 (1957), pp. 120-122.
- Bloch, Bernard, and Trager, George L. Outline of Linguistic Analysis. Baltimore Md. : Linguistic Society of America, 1942.
- Buchanan, Cynthia D. A Programmed Introduction to Linguistics: Phonetics and Phonemics. Boston: D.C. Heath and Co., 1963.
- Chatman, Seymour. "Some Problems in Teaching English Pronunciation to Persian Speakers", Language Learning, IV, 1-2 (1951-52).
- Ekhtiar, M.A. An Outline of Phonetics and English Pronunciation. Tehran: Tehran Mossavar Press, n.d.
- Fries, Charles C. Teaching and Learning English as a Foreign Language. Ann Arbor, University of Michigan Press, 1962.
- Gleason, H.A. An Introduction to Descriptive Linguistics. New York: Henry Holt and Co., 1955.
- Hodge, Carleton T., and associates. Spoken Persian. Washington: Centre of Applied Linguistics of the Modern Language Associations of America, 1960.
- Hughes, John P. The Science of Language. New York: Random House, 1962.
- Lado, Robert. Linguistics Across Cultures: Applied Linguistics for Language Teachers. Ann Arbor, University of Michigan Press, 1960.
- Lado, Robert, and Fries, Charles C. English Pronunciation: Exercises in Sound Segments, Intonation and Rhythm. Ann Arbor, The University of Michigan Press, 1960.

- Lambton, Ann K.S. Persian Grammar. Cambridge University Press, 1961.
- Miller, George A. Language and Communication. McGraw Hill Co., 1963.
- Nasr, Raja T. The Teaching of English to Arab Students. Longmans, 1963.
- Neisari, Salim. Ketabe Avvale Farsi: A Persian Primer. Tehran: n. publisher, 1335.
- Pike, K.L. Phonemics: A Technique for Reducing Languages to Writing. Ann Arbor, University of Michigan Press, 1947.
- Shen, Yao. "Some Allophones Can Be Important", Language Learning, IX, 1-2 (1959), pp. 7-18.
- Slager, William, and Lehn, Walter. "The Contrastive Study of Egyptian Arabic and American English: The Segmental Phonemes", Language Learning, IX, 1-2 (1959), pp. 110-118.
- Trager, G.L., and Smith, H.L. An Outline of English Structure. Washington: American Council of Learned Societies, 1957.
- Wallace, Betty Jane. The Pronunciation of American English. Ann Arbor, George Wahr, 1951.
- Yorkey, Richard C. A Study of the Practical Application of Structural Linguistics to the Teaching of English Lebanese Elementary Schools. A Doctoral Dissertation, The University of Michigan, 1959.
- . Pronunciation Practice. Lebanon: American University of Beirut, 1962.