THE PHONETICS AND PHONOLOGY OF

ISTANBUL TURKISH

Thesis submitted to the University of London for the

Degree of Ph. D.

by

Bengisu Rona Winnick

School of Oriental and African Studies

1972
ABSTRACT

A phonetic and phonological analysis of Istanbul Turkish is presented in this thesis in two parts, part I — Phonetics, covering chapters 1—3, and part II — Phonology, covering chapters 4—8.

A phonetic description and classification of vowels in monosyllabic words is given in Chapter 1, and in Chapter 2 consonants are described and classified in articulatory phonetic terms.

In Chapter 3 the distinction between assimilated and unassimilated loanwords is established, and various phonetic features of unassimilated loanwords are examined.

Root structures of nouns, adjectives and verbs are analysed in Chapter 4, and prosodies are set up for the root as well as subsystems for C and V systems. Phonological structures of unassimilated nouns and adjectives are also given.

In Chapter 5 affixes are analysed in two main groups: native Turkish affixes and non-native affixes, and structures are given for them.

In Chapter 6 junction prosodies are set up to show the prosodic links between roots and suffixes, and suffixes and suffixes.

Onomatopoeia and reduplication are discussed in Chapter 7. Structures of onomatopoeic words are analysed, and various types of reduplication discussed.

Chapter 8 is concerned with some aspects of discourse harmony. Prosodies are set up for inter-word and intra-word
junctions, based on observations of phonic data in a quick style of speech.

Some experimental findings obtained by the aid of palatography, spectrography and mingography which provide instrumental evidence for the perceptual observations of the articulatory features of vowels and consonants are presented in Appendix I.

A list of monosyllabic words in which vowels of different groups are illustrated is given in Appendix II.

Appendix III provides a list of the most widely and frequently used onomatopoeic words.

A bibliography is given at the end of the thesis.
I would like to express my grateful thanks to my supervisor Mrs. Natalie Waterson at the School of Oriental and African Studies for her help and encouragement and patient guidance at all times in the writing of this thesis.

I would also like to thank Mr. A. W. Stone who generously gave his time to help me in carrying out the experiments and clarified many technical points in connection with the findings, and to the staff of the Department of Phonetics and Linguistics of the School, from whose lectures I benefited immensely.

I am indebted to Prof. V. L. Ménage who gave me invaluable advice on the historical side of Turkish, and has always been willing to discuss problems that arose during the preparation of this work.

To my husband and my parents I am grateful for the understanding they have shown during the time spent on this work.
System of Reference
References to books and articles relevant to the topics under discussion are made by placing a number at the appropriate place in the context referring to a correspondingly numbered footnote at the bottom of the page which gives the author's name, the title of the work in question, the date of publication and where possible, the page numbers.

Cross references are mostly given by indicating the number of chapter and section, and where necessary, subsection, paragraph or subparagraph, eg. 4.2.2.3.1. is read as follows:

4 refers to Chapter 4
2 " section 2 of Chapter 4
2 " subsection 2 of section 2
3 " paragraph 3 of subsection 2
1 " subparagraph 1 of paragraph 3
Abbreviations

BSOAS  Bulletin of the School of Oriental and African Studies
IPA    International Phonetic Alphabet
mingo. Mingogram
palat. Palatogram
pl.    Plural
PUDPS Proceedings of the University of Durham Philosophical Society
sg.    Singular
spec.  Spectrogram
TPS    Transactions of the Philological Society
Symbols and Notational Conventions

Enclose phonetic symbols

Enclose glosses

i. Enclose optionally chosen items

ii. in glosses and in the descriptions enclose additional information for clarity

indicates intra-word and inter-word junctions

results in

The symbols and diacritics used in the transcription of the examples are those of the IPA Chart, but in the case of some of the IPA symbols a deviation from their use in the chart was found to be necessary for typographical convenience. Such changes are as follows:

[ v ] for IPA [ u ]

[ a ] for IPA [ c ]

[ a ] for IPA [ a ]

The vowel symbols are not used with their cardinal values in that variations in degrees of openness/closeness and frontness/backness that are not great enough to justify using a different symbol are indicated by the usual IPA diacritics, viz. [ , . , + , - ], so that [ u ] close variety of back rounded vowel, [ u ] less close variety of back rounded vowel.
List of Contents

Title Page ................................................................. i
Abstract ................................................................. ii
Acknowledgements ...................................................... iv
System of Reference .................................................. v
Abbreviations ............................................................ vi
Symbols and Notational Conventions ............................... vii
List of Contents ........................................................ viii
List of Palatograms .................................................... xvi
List of Spectrograms .................................................. xvi
List of Mingograms .................................................... xvii
Introduction ............................................................. xviii
Part 1 - Phonetics
Chapter 1 - Description and Classification of Vowels
1.1. Introduction ......................................................... 2
1.1.2. The State of the Glottis ....................................... 3
1.1.3. The Position of the Soft Palate ............................... 3
1.1.4. Tongue Position ................................................ 3
1.1.5. Lip Position ..................................................... 3
1.1.6. Jaw Opening .................................................... 4
1.1.7. Vowel Length .................................................. 4
1.2. A Group Vowels ................................................... 4
1.2.1. .......................... ................................. 4
1.2.2. .............................................................. 5
1.2.3. .............................................................. 5
1.2.4. .............................................................. 5
1.2.4.1. Palatal Initial - Palatal Final ......................... 5
1.2.4.2.i. Palatal Initial - Non palatal Final
1.2.4.2.ii. Non palatal Initial - Palatal Final
1.2.4.3. Non - palatal Initial - Non palatal Final
1.3. E Group Vowels
1.3.1. ĭ and cv
1.3.2. cv
1.3.3. ĭc, cvc, cvcc
1.4. İ Group Vowels
1.4.1. ǐv
1.4.2. cvc and cvcc
1.5. İ Group Vowels
1.5.1. ǐv
1.5.2. ĭc, cvc, cvcc
1.6. 0 Group Vowels
1.6.1. ă and cv
1.6.2. ăv
1.6.3. ăc, cvc and cvcc
1.7. Ö Group Vowels
1.7.1. őc and vcc
1.7.2. cvc and cvcc
1.8. Ü Group Vowels
1.8.1. ęv
1.8.2. ev
1.8.3. ęc, cvc and cvcc
1.9. Ü Group Vowels
1.9.1. ęc, vcc, cvc and cvcc
Chapter 2 - Description and Classification of Consonants.

2.1. Introduction ........................................................................................................ 25

2.2. Stops ....................................................................................................................... 26

2.2.1. Plosives ............................................................................................................. 26

2.2.1.1. Voiceless, bilabial [p] ................................................................................. 26

2.2.1.2. Voiceless, palatalized, bilabial plosive [ך] ............................................. 27

2.2.1.3. Voiced, bilabial plosive [b] ....................................................................... 27

2.2.1.4. Voiced, palatalized, bilabial plosive [ך] .................................................. 28

2.2.1.5. Voiceless, dental plosive [t] ....................................................................... 28

2.2.1.6. Voiceless, palatalized, dental plosive [ך] ................................................ 29

2.2.1.7. Voiced, dental plosive [d] ......................................................................... 29

2.2.1.8. Voiced, palatalized, dental plosive [ך] ...................................................... 29

2.2.1.9. Voiceless, palatal plosive [c] ...................................................................... 30

2.2.1.10. Voiceless, velar plosive [k] ...................................................................... 30

2.2.1.11. Voiced, palatal plosive [ך] ...................................................................... 31

2.2.1.12. Voiced, velar plosive [g] ......................................................................... 31

2.2.1.13. Glottal Stop .............................................................................................. 31

2.2.2. Affricates .......................................................................................................... 32

2.2.2.1. Voiceless, palato-alveolar affricate [ץ] .................................................... 32

2.2.2.2. Voiced, palato-alveolar affricate [ךץ] ...................................................... 33

2.3. Nasals ................................................................................................................... 34

2.3.1. Voiced, palatalized, bilabial nasal [-m] ......................................................... 35

2.3.2. Voiced, bilabial nasal [m] ............................................................................. 35

2.3.3. Voiced, palatalized, denti-alveolar nasal [ךn] ............................................. 35

2.3.4. Voiced, denti-alveolar nasal [ךn] ................................................................. 35

2.3.5. Voiced, palatal nasal [ךn] .......................................................................... 36

2.3.6. Voiced, pre-velar nasal [-ךn] ..................................................................... 36
2.3.7. Voiced, velar nasal [ŋ] ........................................ 36
2.4. Sibilant Continuants ............................................. 37
  2.4.1. Voiceless, palatalized, alveolar sibilant [ʃ] ....... 37
  2.4.2. Voiceless, alveolar sibilant [s] ....................... 37
  2.4.3. Voiceless, palato-alveolar sibilant [ʃ] ............. 38
  2.4.4. Voiced, palatalized, alveolar sibilant [ʒ] .......... 39
  2.4.5. Voiced, alveolar sibilant [z] .......................... 39
  2.4.6. Voiced, palato-alveolar sibilant [ʒ] ............... 40
2.5. Non-sibilant Continuants ........................................ 40
  2.5.1. Fricatives ................................................. 40
    2.5.1.1. Voiceless, palatalized, bilabial fricative [ɸ] .. 40
    2.5.1.2. Voiceless, bilabial fricative [ɸ] .................. 41
    2.5.1.3. Voiceless, palatalized, labio-dental fricative [ɕ] 41
    2.5.1.4. Voiceless, labio-dental fricative [ʃ] ............. 41
    2.5.1.5. Voiceless, palatal fricative [ç] ..................... 41
    2.5.1.6. Voiceless, velar fricative [x] ...................... 42
    2.5.1.7. De-voiced, post-alveolar flapped fricatives ..... 42
      2.5.1.7.1. De-voiced, palatalized, post-alveolar, flapped fricative [ɣ] .......................................... 42
    2.5.1.7.2. Devoiced, post-alveolar, flapped fricative [x] .. 43
2.5.2. Frictionless Continuants ..................................... 43
    2.5.2.1. Voiced, palatalized, bilabial frictionless continuant [ɣ] .......................................................... 43
    2.5.2.2. Voiced, bilabial frictionless continuant [w] ...... 43
    2.5.2.3. Voiced, palatalized, labio-dental frictionless continuant [ɣ] ....................................................... 44
    2.5.2.4. Voiced, labio-dental frictionless continuant [v] 44
    2.5.2.5. Voiced, palatal frictionless continuant [j] ...... 44
Chapter 3 - Loanwords

3.1. Introduction ............................................. 55
3.2. Unassimilated Loanwords ............................... 55

Part II - Phonology

Chapter 4 - Root Structures

4.1. Introduction ............................................... 63
4.1.1. Prosodies of the Root .................................. 63
4.1.2. V Systems ............................................... 65
4.1.2.1. Prosodies of the Root in relation to V Systems .... 66
4.2. The Noun .................................................. 68
4.2.1. Native and Assimilated-loan Noun Roots ............... 68
4.2.1.1. Syllabic Structure .................................... 68
4.2.1.2. C Systems ............................................ 70
4.2.1.2.1. CVC Structure .................................... 70
4.2.1.2.2. CV-CVC Structure ........................................ 76
4.2.1.2.3. CVCC Structure ........................................ 79
4.2.2. Unassimilated-loan Noun Roots ................................ 83
4.2.2.1. Syllabic Structure ........................................ 83
4.2.2.2. Prosodies .................................................. 84
4.2.2.2.1. Prosodies of the Unassimilated-loan Root in Relation to V Systems ........................................ 84
4.2.2.3. C Systems .................................................. 85
4.2.2.3.1. CCVC Structure ........................................ 85
4.3. The Adjective .................................................... 90
4.3.1. Native and Assimilated-loan Adjective Roots .............. 90
4.3.1.1. Syllabic Structure ........................................ 90
4.3.1.2. C Systems .................................................. 91
4.3.1.2.1. CVC Structure ........................................ 91
4.3.1.2.2. CV-CVC Structure .................................... 95
4.3.1.2.3. CVCC Structure ....................................... 99
4.3.2. Unassimilated-loan Adjective Roots ....................... 102
4.4. The Verb ....................................................... 103
4.4.1. Pure Roots ................................................... 103
4.4.2. Monosyllabic Verb Root ..................................... 104
4.4.2.1. Syllabic Structure ....................................... 104
4.4.2.2. V Systems ................................................ 105
4.4.2.3. C Systems ................................................ 105
4.4.2.3.1. CVC Structure ....................................... 105
4.4.2.3.2. VC Structure ........................................ 109
4.4.2.3.3. CV Structure ........................................ 111
4.4.2.3.4. CVCC Structure ...................................... 111
4.4.2.3.5. VCC Structure ....................................... 113
4.5. Summary and Comparison of Initial and Final Systems ... 114
Chapter 5 - Affixes

5.1. Introduction .............................................. 117
5.2. Native Turkish Suffixes .................................... 117
5.2.1. Suffix Structures ........................................ 118
5.2.2. Prosodies .................................................. 118
5.2.3. V Systems ................................................. 119
5.2.4. C Systems .................................................. 119
5.2.5. Analysis of the Suffix Structures ....................... 120
5.2.5.1. V Initial Suffixes ...................................... 120
5.2.5.2. C Initial Suffixes ...................................... 122
5.3. Non-native Affixes .......................................... 126
5.3.1. The Structure of the Non-native Affixes .............. 126
5.4. Conclusions .................................................. 127

Chapter 6 - Junction Prosodies

6.1. Introduction .............................................. 128
6.2. Root + Suffix Junction Prosodies ......................... 128
6.2.1. y/w Prosodies ............................................ 128
6.2.2. r Prosody ................................................. 129
6.2.3. r Prosody .................................................. 130
6.2.4. H Prosody ................................................ 130
6.2.5. H Prosody ................................................ 136
6.2.6. J Prosody .................................................. 139
6.2.7. N Prosody ................................................ 140
6.2.8. S Prosody ................................................ 140
6.2.9. C Prosody ................................................ 141
6.2.10. e Prosody ............................................... 142
6.2.11. cc Prosody .............................................. 143
6.2.12. F Prosody ............................................... 144
6.2.13. i Prosody ............................................... 145
Chapter 7 - Onomatopoeia and Reduplication

7.1. Onomatopoeia

7.1.1. Structure of Unsuffixe Onomatopoeic Bases

7.1.1.1. Prosodies

7.1.1.2. V Systems

7.1.1.3. C Systems

7.1.1.4. Conclusions

7.1.1.5. Junction of Onomatopoeic Bases + Suffixes

7.2. Reduplication

Chapter 8 - Some Aspects of Discourse Harmony

8.1. Introduction

8.2. Inter-word and Intra-word Junction Prosodies

8.2.1. y Prosody

8.2.2. w Prosody

8.2.3. r Prosody

8.2.4. r Prosody

8.2.5. I Prosody

8.2.6. s Prosody

8.2.7. v Prosody

8.2.8. v Prosody

8.2.9. X Prosody

8.2.10. X Prosody

8.2.11. = Prosody

Appendix 1 - Instrumental Findings

I.1. Palatography
I.1.1. Discussion on the Palatograms .................. 181
I.2. Sonagraph (sound spectrograph) .................. 184
I.2.1. Discussion on the Spectrograms ................. 185
I.3. Mingograph ..................................... 186
I.3.1. Discussion on Mingograms ...................... 187

Appendix II - List of Monosyllabic Words ............. 199
Appendix III List of Onomatopoeic Words ............... 211
Bibliography ......................................... 215

A palatogram Grid and a Sonagraph Grid are kept inside the back cover.

List of Palatograms

1. [ ęs ] p.188  10. [ aż ] p.189
2. [ uk ] p.188  11. [ ḫęsę ] p.189
3. [ ys ] p.188  12. [ ure ] p.189
4. [ us ] p.188  13. [ elę ] p.190
5. [ es ] p.188  14. [ aż ] p.190
6. [ ęs ] p.188  15. [ ēnę ] p.190

List of Spectrograms

2. [ ią ] p.191  8. [ swp ] p.194
6. [ kux ] p.193
List of Mingograms

1. [ ēŋ ]      p.197
2. [ xunūm ]   p.197
3. [ sνŋy ]    p.197
4. [ dūns ]    p.198
5. [ ojje ]    p.198
6. [ bʊmja ]   p.198
INTRODUCTION

The present phonetic and phonological analysis of Istanbul Turkish is based on the speech of the writer which represents the main characteristics of colloquial Istanbul Turkish as spoken by the generations born during and after the late Thirties most of whom had the opportunity of some further education other than primary and secondary schooling. The emphasis on this being the speech of those particular generations is important; the Turks had been using the Arabic script, which was unsuited to Turkish, since their conversion to Islam around the 10th century, and throughout the centuries Turkish had been borrowing a vast number of words and phrases from Persian and Arabic. Thus the written language had become highly artifical which also affected the spoken language. After the rise of the new Turkish republic the Latin alphabet was adopted in November 1928 and a few months later the old Arabic script was banned. This was a first step in breaking away from the influence of Arabic and Persian, and the Turkish Linguistic Society, founded in 1932, started to replace loanwords by Turkish words taken from dialects, or from other Turkic languages, and where this was not possible new words were invented or even taken from Western languages. However a number of very commonly used Arabic and Persian words were left to assimilate.¹

¹ For a summary of the reforms in script and language see B. Lewis, 'The Emergence of Modern Turkey', 1961.
Thus the new generations were much less exposed to Arabic and Persian influence, and also the greater educational opportunities meant that they had a wide range of vocabulary and were encouraged to use, where possible, native Turkish words rather than loanwords.

The data was collected by the writer over a period of three years, and consists of recordings and observations made of the writer's own speech and that of the other speakers of Istanbul Turkish of the generations indicated above. The findings were then checked with the speech of the other speakers. In the part of this thesis dealing with phonetics, vowels and consonants are described in terms of articulatory phonetics using the symbols of the I.P.A.

The phonological analysis is an application of the prosodic approach which considers phonological structures in terms of phonematic units and prosodies. Phonematic units are phonological elements which may be referred to places in the structure, these are divided into consonantal elements and vocalic elements which are referred to as C and V systems. Prosodies, on the other hand, extend over sequences of phonematic units of any length, that is they have relevance to more than one place in the structure.

Apart from this thesis no detailed phonetic description of spoken Istanbul Turkish has been made as far as the writer could ascertain; the only descriptions available are found as introductions to grammatical works on Turkish, and are mainly

---

1 An account of prosodic analysis is not given here, for which see J.R. Firth, 'Sounds and Prosodies', TFS, 1948, and R.H. Robins, 'Aspects of Prosodic Analysis', PUDPS, 1957.
intended to give the pronunciation of the orthographic forms and to illustrate vowel harmony as well as the use of different forms of suffixes with different words, as in T. Banguoğlu's 'Türk Grameri', 1959, and G. L. Lewis' 'Turkish Grammar', 1961. Some work has been done on other Turkish dialects, mainly in phonemic terms, e.g. Z. Korkmaz, Güney - batı Anadolu Ağızları: Ses Bilgisi, 1956, and also by the same author, Nevşehir ve Yöresi Ağızları, 1963. There is also L. B. Swift's 'A Reference Grammar of Modern Turkish', 1961, which gives a description of Turkish in phonemic terms, and R. B. Lees' 'The Phonology of Modern Standard Turkish', 1961, which is an application of transformational - generative approach to phonological description. Apart from N. Waterson's article on 'Some aspects of the phonology of the nominal forms of the Turkish word', BSOAS, 1956, prosodic analysis has not been applied to Turkish before. Using this method of analysis, the present thesis examines the structure of roots and affixes, and establishes inter-word and intra-word junction prosodies to account for the various types of juncture found in the language.

An analysis of onomatopoetic words is also given, a topic on which, to the writer's knowledge, there has been no previous work. It also attempts, for the first time, to reveal some aspects of discourse harmony, a topic which in itself could constitute a separate study.

The study of intonation was excluded from the thesis for two reasons: because it is a topic which is large enough to be the subject of a separate thesis, and because it is already being
subjected to detailed investigation by Miss M. Bainbridge, lecturer in Turkish, at the School of Oriental and African Studies, University of London.

An attempt has thus been made to fill the gap in knowledge of the spoken form of the Istanbul dialect of Turkish by giving as full an account as possible of the phonetics and phonology within the limits referred to above.
PART I - PHONETICS
CHAPTER ONE

Description and Classification of Vowels

1.1. Introduction

A phonetic description and classification of the vowels in monosyllabic words in Istanbul Turkish as spoken in isolation is given in this chapter.

Monosyllabic words in Istanbul Turkish may be described as being of the following types: v, ù, cv, cv, v, vcc, cvc and cvcc. This makes it possible to describe vowels as occurring pre-consonantally, interconsonantally, and post-consonantally, i.e., in initial, medial and final positions.

The various vowels are classified into eight groups in accordance with tongue height. Consonants affect vowels of these groups depending on whether they are in initial and/or final positions, i.e., whether they precede or follow the vowel. Vowels of each group are, therefore, further sub-divided according to differences in quality related to the consonants preceding and/or following the vowels in question. Where vowels of some groups do

---

1 Monosyllabic words are taken as the framework for the description of vowels because these show the effects of the preceding and following consonants on the vowels most clearly.

2 c and v represent consonants and vowels at the phonetic level, and are used in phonetic description. For phonological structures see Chap. 4.

3 For the list of words in which the vowels of each group occur see Appendix II. The list gives the orthographic form, the phonetic transcription and the English translation of the words. Within each vowel group, words are grouped together according to vowel quality and in these subgroups they are listed in alphabetical order for easy reference.
not occur in initial or in final positions, such exceptions are noted when dealing with each separate group.

1.1.2. The State of the Glottis

During the production of the vowels the glottis is in vibration, that is the vowels are produced with voice.

1.1.3. The Position of the Soft Palate

The soft palate is raised during the articulation of the vowels when they are not preceded and/or followed by a nasal consonant. If a nasal precedes and/or follows a vowel, there is usually some lowering of the soft palate during the articulation of the vowel in question. Nasality is stronger where the vowel is followed by a nasal+stop, nasal+sibilant or nasal+[j], or where the vowel occurs between two nasal consonants.

1.1.4. Tongue Position

The position of the tongue in the mouth gives us two dimensions of classification for vowels. For this, the highest point of the tongue is located

i. in relation to its position from front to back of the mouth, and

ii. from the roof of the mouth to the floor.

Thus tongue positions of various degrees of front, central, back, and close, half-close, half-open and open are described.

1.1.5. Lip Position

The position of the lips accounts for an important part of the distinctive quality of the vowels. The lips can be rounded, neutral or spread during the articulation of the vowels. The degree

\[1\text{See 2.3.}\]
of rounding is mostly related to tongue height, that is, the degree of rounding increases as the tongue is raised.

1.1.6. Jaw opening

Jaw opening can be narrow, medium or wide. Close vowels have narrow jaw opening, open vowels wide jaw opening, and half-open and half-close vowels have medium jaw opening.

1.1.7. Vowel Length

Long vowels are few in monosyllabic native Turkish words\(^1\), and such as do occur are in words of the phonetic types \(cv\) and \(\bar{v}\). In the orthography vowel length is mostly represented by \(v+g\)\(^2\). In the phonetic descriptions absence of any reference to length will imply that the vowel is short.

Having outlined the characteristics of vowels in general, descriptions of vowels as segments using the traditional terms of phonetic description are given in the following sections.

1.2. A Group Vowels

Amongst the various vowels in Istanbul Turkish, the first group of vowels to be examined is the open, neutral\(^3\) group ranging from front to back. This group of vowels is called the A group vowels. The differences in quality of vowels of the A group are examined below in monosyllabic words of different phonetic types, viz. \(\bar{v}, cv, cv, vc, vcc, cvc, cvcc\).

1.2.1. \(\bar{v}\)

Long, open, central, neutral vowel, i.e. \([\bar{u}:\].

\([\bar{u}:\]  aç 'net'

---

\(^1\) For difference between native and non-native words see 3.1.

\(^2\) See N. Waterson, 'Phonology of the Nominal Forms of the Turkish Word', BSOAS, Vol. 18, 1956, p. 582, footnote 4.

\(^3\) Neutral refers to the lip position. See 1.1.5.
1.2.2. cv

i. Palatal initial + long, open, front, neutral vowel, i.e. [ə:].

[jaː]  yağ  'butter'
[taː]  çağ  'era'

ii. Non palatal initial + long, open, back, neutral vowel, i.e. [a:].

[baː]  bağ  'vineyard'
[daː]  dağ  'mountain'
[saː]  sağ  'alive'

1.2.3. cv

Palatal initial + short, open, front, neutral vowel, i.e. [a].

[ja]  ya  'or'

1.2.4. vc, vcc, cvc, cvcc

In the following sections the various qualities of the vowels of the A group in non-final positions in different contexts are classified starting from the most forward quality and going to the most back. The vowels in vc and vcc types are discussed together with cvc and cvcc types as the same description applies to the vowels of all these types.

1.2.4.1. Palatal Initial — Palatal Final

Palatal consonants whether they precede or follow the vowel have a fronting effect on it, and when both the initial and the final consonants are palatal the fronting effect on this open vowel is greatest and we get the frontest and closest quality, i.e. [ə].

[taːj]  çağ  'tea'
[jaʃ]  yay  'spread'
[jaʃ]  yaş  'wet'
[jaʃ]  şaş  'be amazed'

1.2.4.2. Palatal Initial — Non-palatal Final

In contexts where the vowel is preceded by one of the palatal
consonants [ ə, ʊ, ʃ, j, l] and followed by a non-palatal consonant it is fully open, front, neutral, i.e. [ a], more fronted at the onset than at the ending, similar to the quality in 1.2.3 above.

The non-palatal consonant that follows [ a] is slightly advanced in articulation, but not enough to justify calling it palatalized, therefore a separate symbol is not used.

\[
\begin{align*}
[\ ə_+\ ] & \quad \text{cam} \quad \text{glass} \\
[\ ʊ_+\ ] & \quad \text{çam} \quad \text{pine tree} \\
[\ ʊ_+\ ] & \quad \text{çak} \quad \text{strike} \\
[\ ʃ_+\ ] & \quad \text{şan} \quad \text{fame} \\
[\ ʃ_+\ ] & \quad \text{yan} \quad \text{burn} \\
[\ ʃ_+\ ] & \quad \text{yas} \quad \text{mourning}
\end{align*}
\]

1.2.4.2.ii. (Non-palatal Initial) Palatal Final

In contexts where the vowel is initial, or where it is preceded by a non-palatal consonant and followed by [ ʊ, ʃ] or [ j], it is fully open, front and neutral, i.e. [ a], the onset being slightly less front than the ending.

\[
\begin{align*}
[\ ə_+\ ] & \quad \text{aç} \quad \text{open} \\
[\ ʊ_+\ ] & \quad \text{saç} \quad \text{hair} \\
[\ ʃ_+\ ] & \quad \text{aç} \quad \text{food} \\
[\ ʃ_+\ ] & \quad \text{taç} \quad \text{stone} \\
[\ ʃ_+\ ] & \quad \text{ay} \quad \text{month} \\
[\ ʃ_+\ ] & \quad \text{key} \quad \text{slide}
\end{align*}
\]

1.2.4.3. (Non-palatal Initial) Non palatal Final

In contexts where the vowel is initial or preceded by a non-palatal consonant, and followed by [ ʃ], the vowel is open.

---

1 ( ) are used to indicate alternative possibilities of context, e.g. the heading for paragraph 1.2.4.2.ii should be read as 'in context of non-palatal initial and palatal final, and in context of v initial and palatal final', i.e. in cvc, cvcc and vc, vcc types.
slightly advanced from central, neutral, i.e. [ a ].

[ a ] ar 'honour'
[ k a ] kar 'snow'
[ s a r k ] sark 'lean out'

ii. In contexts where the vowel is initial or preceded by a non-palatal consonant, and followed by one of the following: [ p, t, k, n, m ] it is open, central, neutral, i.e. [ v ].

[ h u p ] hap 'pill'
[ k a p ] kap 'snatch'
[ s a p ] sap 'stem'
[ u t ] at 'horse'
[ b u t ] bat 'sink'
[ t u t ] tat 'taste'
[ a k ] ak 'white'
[ b u k ] bak 'look'
[ t u k ] tak 'put on'
[ a n ] an 'moment'
[ k a n ] kan 'blood'
[ t a n k ] tank 'tank'
[ d a m ] dam 'roof'
[ z a m ] zam 'increase'
[ n a m ] nam 'fame'

iii. In contexts where the vowel is initial or preceded by a non-palatal consonant, and followed by one of the following: [ s, z, f, v ] it is open, retracted from central, neutral, i.e. [ ø ].

[ ø a s ] as 'hang'
[ b ø a s ] bas 'step on'
In contexts where the vowel is initial or preceded by a non-palatal consonant, and followed by [ɪ], it is open, back, neutral, i.e. [ɑ], and is similar in quality to the vowel in 1.2.2.ii.

1.3. E Group Vowels

This is a group of front, spread vowels varying in closeness and openness between not quite fully open and half-close. Vowels of this group can occur in initial, medial and final positions in monosyllabic words.

1.3.1.  v and cv

(Palatalized initial) long, half-open, front, spread vowel, i.e. [ɛ:].

[ɛ:]  eg  'bend'

[ɖɛ:]  deg  'touch' ¹

¹Some speakers of Istanbul Turkish have the forms [ej] and [dej] instead.
1.3.2. cv

Palatal or palatalized consonant + half-open, front,
spread vowel, i.e. [ɛ].

[je] ye 'eat'
[ne] ne 'what'
[ye] ve 'and'

1.3.3. vc, cvc, cvcc

The subdivisions of the vowels of the E group in mono-
syllabic words of vc, cvc and cvcc types starting with the most
open quality and going to the most close are as follows:

i. In contexts where the vowel is preceded by a palatal
or palatalized consonant, viz. [ʃ, tʃ, ʒ, ʒ, ʒ, ʒ] and
followed by the palatal lateral consonant [l], the front, open,
spread vowel has the most open quality of the vowels of this group,
i.e. [æ].

[ʃæl] gel 'come'
[tʃæl] çel 'attract'
[jæl] yel 'wind'
[çæl] kel 'bald'
[tæl] tel 'wire'
[dæl] del 'drill'
[sæl] sel 'flood'

Here it must be stressed that these different vowel
qualities found in monosyllabic words occur only when the words
are uttered in isolation. When they are used in sentences or in
suffixed forms, the quality of the vowel in question is often

---

1 For another vowel quality of the E group in vc and cvc
with [l] final see 1.3.3.iv b.
different. For example,

\[
\begin{align*}
[\text{jæ}l] & \quad \text{gel} \quad \text{'come'} \\
[\text{je}ljorum] & \quad \text{geliyorum} \quad \text{'I am coming.'}
\end{align*}
\]

Such variations in quality are discussed elsewhere.  

ii. In contexts where the vowel is initial, or preceded by a palatal or palatalized consonant and followed by \([\text{j}]\), a slightly more close variety of the vowel is found, viz. \([\text{æ}]\).

\[
\begin{align*}
[\text{æs}] & \quad \text{er} \quad \text{'soldier'} \\
[\text{ds}s\text{æ}] & \quad \text{der} \quad \text{'says'} \\
[\text{ds}s\text{æt}] & \quad \text{dert} \quad \text{'sorrow'} \\
[\text{ds}s\text{æ}] & \quad \text{ger} \quad \text{'stretch'} \\
[\text{ds}s\text{æ}] & \quad \text{ser} \quad \text{'green house'}
\end{align*}
\]

iii. In contexts where the vowel is preceded by a palatal or palatalized consonant and followed by \([\text{m}]\) or \([\text{n}]\), there is a half-open, front, spread vowel, i.e. \([\text{ɛ}]\).

\[
\begin{align*}
[\text{ɛs}\text{m}] & \quad \text{gem} \quad \text{'bit of a bridle'} \\
[\text{ɛs}\text{m}] & \quad \text{hem} \quad \text{'also'} \\
[\text{ɛs}\text{m}] & \quad \text{yem} \quad \text{'animal feed'} \\
[\text{ɛs}\text{n}] & \quad \text{ben} \quad \text{'I'} \\
[\text{ɛs}\text{n}] & \quad \text{sen} \quad \text{'you'} \\
[\text{ɛs}\text{n}] & \quad \text{ten} \quad \text{'complexion'} \\
[\text{ɛs}\text{n}] & \quad \text{yen} \quad \text{'win'}
\end{align*}
\]

---

1 See Chapter 8, pp. 170 - 179.

2 For a different vowel quality in contexts where the vowel is followed by \([\text{n}]\) and \([\text{n}]\) in vc and cvc see 1.3.3.iv.b.
iv. a/ In contexts where the vowel is initial or preceded by a palatal or palatalised consonant, and followed by a palatal consonant, viz. [ ʧ, ʃ ] or [ ʒ ], the vowel is half-open, front, spread, i.e. [ ɛ ], slightly closer than [ ɛ ].

- [ ɛʧ ] geç 'late'
- [ ɛʃ ] seç 'choose'
- [ ɛʃ ] eq 'equal'
- [ ɛʒ ] deç 'drill'
- [ ɛʃ ] bey 'gentleman'
- [ ɛʃ ] rey 'vote'

b/ In vc types where the vowel is followed by [ m, n ] or [ ɻ ], and in cvc types where the vowel is preceded by [ n ] or [ ɻ ] and followed by [ m ] or [ ɻ ], the vowel is half-open, front, spread, i.e. [ ɛ ].

- [ ɛm ] em 'suck'
- [ ɛn ] en 'width'
- [ ɛɻ ] el 'hand'
- [ ɛɻ ] bel 'waist'
- [ ɛmɻ ] nem 'humidity'

It must be noted that there is individual variation regarding the quality of the vowel in the production of the above. These same words can also be heard uttered with the most open quality of the E group, i.e. as [ æl ], [ bæl ], [ æn ], [ æm ], but such forms are much less common.

v. In contexts where the vowel is initial, or preceded by a palatal or palatalized consonant and followed by one of the following: [ ʧ, ʃ, ʒ, ʒ, s, Z ], the vowel is half-close, front, spread, i.e. [ e ].
1.4. I Group Vowels

These are the vowels of the close to half-close, back, spread group. Vowels of this group are the only ones in Turkish which do not occur initially in monosyllabic words.

1.4.1. cv

The only vowel belonging to the I group that occurs finally is the long, half-close, back, spread vowel, i.e. [ ɣ:].

[ ɣːː] çığ 'avalanche'
[ ɣː] yığ 'pile up'
[ tːː] tığ 'crochet hook'

vi. In contexts where the vowel is initial or preceded by a palatal or palatalized consonant, and followed by [ ɔ], the vowel is front, spread, slightly closer than [ ɛ], i.e. [ ɛ].

[ ɛː] ek 'addition'
[ ɛː] kek 'cake'
[ ɣːː] cek 'pull'
[ ɣː] pek 'much'
[ ɛː] sek 'jump'
1.4.2. cvc and cvcc

Variations in the quality of the vowels of this group in cvc and cvcc, starting with the most open and going to the most close are as follows:

i. In contexts where the vowel is preceded by a palatal or non-palatal consonant and followed by a palatal consonant, viz. [ t', j, j ], or velar lateral [ 3 ], the vowel is half-close, back, spread, i.e. [ ɣ ], of similar quality to that of vowels in 1.4.1.

- [ k'ï' ] kïç 'back'
- [ dšj ] dšq 'outside'
- [ kšj ] kšq 'winter'
- [ kšj ] kšy 'sacrifice'
- [ kśi ] kšl 'hair'
- [ jśi ] jšl 'year'

ii. In contexts where the vowel is preceded by a palatal or a non-palatal consonant, and followed by a non-palatal consonant, viz. [ p, t, k, n, x, x ], it is slightly more open than fully close, back and spread, i.e. [ u ].

- [ twp ] tip 'medicine'
- [ kút ] kit 'scarce'
- [ šulk ] šuk 'squeeze'
- [ juk ] yik 'demolish'
- [ kurn ] kın 'cover'
- [ kwr ] kır 'break'
- [ kwrp ] kırp 'shear'
- [ mum ] müh 'nail'
iii. In contexts where the vowel is preceded by a non-palatal consonant and followed by a non-palatal sibilant, viz. [ s, z ], the vowel is fully close, back, spread, i.e. [ u ].

[ kus ] kis 'reduce'
[ kuı̈ ] kiı̈ 'girl'
[ suı̈ ] siı̈ 'leak'

1.5. ı Group Vowels

The vowels of this group are close, front, and spread, with some slight differences in degree of frontness and closeness. All consonants in the vicinity of ı group of vowels are palatalized in articulation, those preceding being more strongly so. The palatals [ ı̈ , jı̈ , cı̈ , cı̈ ] are more strongly palatalized with vowels of the ı group than with any of the other vowels. Only long vowels of this group occur finally, short vowels occur in initial and medial positions.

1.5.1. cv

Palatal initial + long , close, front, spread vowel, i.e.[ı:].

[ ı̈ : ] ıı̈ 'raw'
[ jı̈ : ] giı̈ 'wear'

1.5.2. vc, vcc, cvc and cvcc

The subdivisions of the ı group vowels in monosyllabic words of vc, vcc, cvc and cvcc types, starting with the most open quality and going to the most close, are as follows:

i. The most open quality which is also slightly retracted is found

---

1 This is not marked in the phonetic transcription for simplicity of symbolization.

2 An alternative pronunciation of this word is [ iıt ].
in contexts where the vowel is initial in the syllable or preceded by a palatal or palatalized consonant, and followed by [ j ], [ ʨ ], or [ ʃ ]. The vowel quality is symbolized as [ i ].

\[
\begin{align*}
[ ɨi ] & \quad \text{il} \quad \text{'city'} \\
[ ɨiɛ ] & \quad \text{ilk} \quad \text{'first'} \\
[ ɨiɛ ] & \quad \text{bil} \quad \text{'know'} \\
[ ɨi ] & \quad \text{iq} \quad \text{'drink'} \\
[ ɨiɛ ] & \quad \text{biq} \quad \text{'cut out'} \\
[ ɨi ] & \quad \text{iq} \quad \text{'work'} \\
[ ɨiɛ ] & \quad \text{diq} \quad \text{'tooth'}
\end{align*}
\]

ii. In contexts where the vowel is initial or preceded by a palatal or palatalized consonant and followed by one of the following: [ ɲ , 屦 , ɲ , ɲ , ʃ , ʃ ], it is close, front, spread, i.e. [ i ].

\[
\begin{align*}
[ ɨiŋ ] & \quad \text{dip} \quad \text{'bottom'} \\
[ ɨiŋ ] & \quad \text{tip} \quad \text{'type'} \\
[ ɨi ] & \quad \text{it} \quad \text{'push'} \\
[ ɨiɛ ] & \quad \text{bit} \quad \text{'louse'} \\
[ ɨiɛ ] & \quad \text{in} \quad \text{'den'} \\
[ ɨiɛ ] & \quad \text{bin} \quad \text{'get on'} \\
[ ɨiɛ ] & \quad \text{qim} \quad \text{'grass'} \\
[ ɨiɛ ] & \quad \text{kim} \quad \text{'who'} \\
[ ɨiɛ ] & \quad \text{kir} \quad \text{'dirt'}
\end{align*}
\]

There is an exception here: In cvc type if both the initial and final consonants are [ m ], then we have the most close quality of ɨ group, i.e. [ ɨ ], e.g. [ ɨim ].
iii. In contexts where the vowel is preceded by a palatal or palatalized consonant and followed by [s], [z], or [c], it is very close, front, spread, i.e. [i].

- [i] is 'smoky'
- [piʃ] pis 'dirty'
- [iq] iz 'trail'
- [biq] biz 'we'
- [tiiq] qiz 'draw'
- [diq] dik 'steep'

1.6. O Group Vowels

The vowels of the O group vary between half-open and half-close, and are back and rounded. In monosyllabic words with vowels of this group, lip rounding starts at the beginning of the word and lasts throughout the whole utterance. Vowels of the O group occur in initial, medial and final positions.

1.6.1. 

Non-palatal initial + long, half-open, back, rounded vowel, i.e. [ɔ:].

- [bo:] boğ 'strangle'
- [do:] doğ 'be born'

1.6.2. 

Half open, back, rounded, i.e. [o].

- [o] o 'it'
1.6.3. vc, cvc and cvcc

In vc, cvc and cvcc types O group vowels can be subdivided as follows, starting with the most open quality and going to the most close.

i. In contexts where the vowel is initial or preceded by a palatal or non-palatal consonant, and followed by [ yön ], [$f$ ], [ $j$ ] or [ $t$ ] it is slightly closer than half-open, back, rounded, i.e. [ $\ddot{o}$ ].

- [k$\ddot{o}$] koç 'ram'
- [b$\ddot{o}$] bog 'empty'
- [x$\ddot{o}$] hog 'pleasant'
- [ay] oy 'vote'
- [s$\ddot{o}$] soy 'peel'
- [t$\ddot{o}$] toy 'inexperienced'
- [o$\ddot{a}$] ol 'be'
- [k$\ddot{a}$] kol 'arm'
- [j$\ddot{a}$] yol 'road'

ii. In contexts where the vowel is initial or preceded by a palatal or non-palatal consonant and followed by one of the following: [ $p$, t, k, n, m, $\Phi$, w, $\chi$ ], it is slightly more open than half-close, i.e. [ o$\ddot{a}$ ].

- [kop] kop 'be separated'
- [ot] ot 'grass'
- [ow] ov 'rub'
- [kov] kov 'send away'

1 [ow] and [k$\ddot{o}$] can have the alternative pronunciations [ $\ddot{o}$ ] and [k$\ddot{o}$] with some speakers.
In contexts where the vowel is preceded by a palatal or non-palatal consonant and followed by [s] or [z], it is half-close, back, and rounded, i.e. [o].

[ồò] ồò 'friend'
[ồɔ] ồɔ 'fire'
[ɔɔɔ] ɔɔɔ '优势'

1.7. ö Group Vowels

The vowels of the ö group are front, rounded, and vary between half-open and half-close. The vowels of this group do not occur finally¹. In initial and medial positions, vowels of

¹ There are a few exceptions to this general statement. The words [dɔew],[sɔew],[œw] have the alternative pronunciations [dœ:],[sœ:],[œ:], with some speakers when uttered in isolation.
this group are always short. In monosyllabic words with vowels of this group, lip rounding starts at the beginning of the word and lasts throughout the whole utterance. Consonants in the vicinity of vowels of the ö group have some degree of palatalization. In vc and vcc types the vowels are opener than the vowels in cvc and cvcc even when followed by the same consonants.

1.7.1. vc and vcc

i. In contexts where the vowel is followed by [ l ] or [ tʃ ], it is slightly more open than half-open, front, rounded, i.e. [ ø ].

[ øl ] òl 'die'
[ ølʃ ] òlq 'measure'
[ øʃ ] òq 'revenge'

ii. In contexts where the vowel is followed by one of the following: [ p , t , k , tʃ , y ], it is half-open, front, rounded, i.e. [ æ ].

[ æp ] õp 'kiss'
[ ætʃ ] õt 'sing'
[ æpʃ ] õn 'front'
[ ætʃ ] õr 'knit'
[ æayı ] õv 'praise'

iii. In contexts where the vowel is followed by [ ɔ ], it is slightly more open than half-close, front, rounded, i.e. [ ɒ ].

[ ɔɔ ] õz 'essence'

1.7.2. cvc and cvcc

Vowels of the ö group are now examined in cvc and cvcc types, starting with the most open quality and going to half-close.

i. In contexts where the vowel is preceded by a palatal or palatalized
consonant and followed by one of the following: [l, v, s, j],
it is half-open, front, rounded, i.e. [ ø ].

[ vœl ] qöl 'desert'
[ jœl ] göl 'lake'
[ jœt ] göq 'migration'
[ œœ/c ] köqk 'mansion'
[ œœ ] köy 'village'

ii. In contexts where the vowel is preceded by a palatal or
palatalized consonant and followed by one of the following:
[ p, b, m, ç, y ], it is slightly more close than half-open,
front, rounded, i.e. [ ø ].

[ vœp ] qöp 'rubbish'
[ jœn ] gön 'bury'
[ jœn ] yön 'direction'
[ œœç ] kör 'blind'
[ ḳœçy ] dört 'four'
[ ḳœcy ] döv 'beat'

iii. In contexts where the vowel is preceded by a palatal or
palatalized consonant and followed by [ ç ] or [ c ], it is
half-close, front, rounded, i.e. [ ø ].

[ vœç ] çöz 'solve'
[ jœç ] göz 'eye'
[ vœc ] çök 'sit down'
[ jœc ] gök 'sky'
1.8. U Group Vowels

Vowels of the U group are close, back, rounded, with slight differences in their degree of closeness and backness. In monosyllabic words with vowels of this group there is rounding throughout the whole utterance. Vowels of this group can occur in initial, medial and final positions.

1.8.1. cv

Non-palatal initial + long, close, slightly advanced from back, rounded vowel, i.e. [u:]

[ tu:] tuɣ 'plume'

1.8.2. cv

Palatal or non-palatal initial + close, slightly advanced from back, rounded vowel similar in quality to [u:] above, i.e. [u:]

[ bu:] bu 'this'
[ su:] su 'water'
[ su:] su 'that'

1.8.3. vc, cvc and cvcc

In contexts where the vowel is initial, or preceded by a non-palatal consonant and followed by one of the following: [γ, f, j, ɹ, i], it is close, slightly advanced from back, rounded, i.e. [u] as in 1.8.2 above.

[ uγ:] uɣ 'fly'
[ suγ:] suɣ 'guilt'
[ tuʃ] tuɣ 'knock out'
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Pronunciation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[du/']</td>
<td>duq</td>
<td>'shower'</td>
</tr>
<tr>
<td>[uj]</td>
<td>uy</td>
<td>'assimilate'</td>
</tr>
<tr>
<td>[xuj]</td>
<td>huy</td>
<td>'habit'</td>
</tr>
<tr>
<td>[bu/']</td>
<td>bul</td>
<td>'find'</td>
</tr>
<tr>
<td>[du/']</td>
<td>dul</td>
<td>'widow'</td>
</tr>
<tr>
<td>[kulp]</td>
<td>kulp</td>
<td>'handle'</td>
</tr>
</tbody>
</table>

ii. In contexts where the vowel is initial, or preceded by a palatal or non-palatal consonant, and followed by one of the following: [t, m, n, j, x, x], it is close, back, rounded, i.e. [u].

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Pronunciation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[jut]</td>
<td>yut</td>
<td>'swallow'</td>
</tr>
<tr>
<td>[ûm]</td>
<td>um</td>
<td>'hope'</td>
</tr>
<tr>
<td>[kûm]</td>
<td>kum</td>
<td>'sand'</td>
</tr>
<tr>
<td>[ûn]</td>
<td>un</td>
<td>'flour'</td>
</tr>
<tr>
<td>[sun]</td>
<td>sun</td>
<td>'offer'</td>
</tr>
<tr>
<td>[kurt]</td>
<td>kurt</td>
<td>'wolf'</td>
</tr>
<tr>
<td>[jurt]</td>
<td>yurt</td>
<td>'country'</td>
</tr>
<tr>
<td>[ruxt]</td>
<td>ruh</td>
<td>'soul'</td>
</tr>
<tr>
<td>[juxt]</td>
<td>quh</td>
<td>'dazzling'</td>
</tr>
</tbody>
</table>

iii. In contexts where the vowel is initial, or preceded by a non-palatal consonant, and followed by [s] or [z], it is very close, back, rounded, i.e. [u].

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Pronunciation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ûs]</td>
<td>us</td>
<td>'mind'</td>
</tr>
<tr>
<td>[sus]</td>
<td>sus</td>
<td>'be quiet'</td>
</tr>
</tbody>
</table>
[buz] buz 'ice'
[tuz] tuz 'salt'

1.9. ü Group Vowels

Vowels of this group are close, front, rounded, and have only slight differences in their degree of closeness. Vowels of this group are short and do not occur finally\(^1\). Consonants in the vicinity of vowels of the ü group are palatalized. Words with vowels of this group have rounding throughout the whole utterance.

1.9.1. vc, vcc, cvc and cvcc

Vowels of the ü group in vc, vcc, cvc and cvcc types can be grouped as follows, starting with the most open quality.

i. In contexts where the vowel is initial or preceded by a palatal or palatalized consonant, and followed by one of the following: [v, f, j, l], it is slightly more open than close, front, rounded, i.e. [γ].

\[
\begin{align*}
[γv] & \quad üq \quad 'three' \\
[fγv] & \quad güq \quad 'difficult' \\
[ðγf] & \quad düq \quad 'fall' \\
[tyj] & \quad tuy \quad 'feather'
\end{align*}
\]

---

\(^1\) In monosyllabic words the only exception to this is the word [tyj] tūy 'feather' which has the phonetic form [ty:] with some speakers.
[ cyl ]  kül 'ash'
[ tyl ]  tül 'lace'

ii. In contexts where the vowel is initial or preceded by a palatal or palatalized consonant, and followed by one of the following: [ p , t , ɸ , n , m , x ], it is close, front, rounded, i.e. [ y ].

[ cy p ]  kūp 'urn'
[ syt ]  sūt 'milk'
[ cy t ]  küf 'mould'
[ ʃp ]  ūn 'fame'
[ ʃp ]  gün 'day'
[ ʃym ]  tüm 'all'
[ cyxc ]  kürk 'fur'

iii. In contexts where the vowel is initial or preceded by a palatal or palatalized consonant, and followed by [ s ], [ z ] or [ c ], it is very close, front, rounded, i.e. [ ş ].

[ yṣt ]  üst 'top'
[ sxs ]  süs 'ornament'
[ dṣz ]  düz 'flat'
[ zṣz ]  sür 'strain'
[ ḫyc ]  bük 'bend'
[ ıyç ]  yük 'load'
CHAPTER TWO

Description and Classification of Consonants

2.1. Introduction

A phonetic description and classification of consonants in Istanbul Turkish as pronounced in slow speech is given in this chapter. The analysis is applicable to the description of consonants in both monosyllabic and polysyllabic words, but examples are given mostly of monosyllabic words for easy reference to vowel qualities in Chapter 1.

Consonants are grouped according to type of articulation as:

i. stops

ii. sibilant continuants

iii. non-sibilant continuants

iv. nasals.

Within these groups consonants are further classified according to their manner and place of articulation, and the state of the vocal cords. During the production of a consonant the lips are

---

1 The point that the phonetic description in this chapter is based on slow speech is important as consonants in various words can be produced in a different way in quick speech, see Chap. 8, pp. 170-179.

2 This does not include suffixed forms.

3 A separate word list is not given for consonants as the quality of consonants can be seen on the word list given for vowels in Appendix II.
rounded in contexts where a rounded vowel precedes and/or follows that consonant within the same syllable. In the context of spread or neutral vowels the lips are not rounded during the production of the consonants. All consonants are articulated with a pulmonic egressive air stream, and all except nasals have velar closure.

The consonants have rather tense articulations in the vicinity of vowels of the E, Ī, Ō and Ū groups. Tenseness in articulation is most pronounced when a consonant is preceded and/or followed by vowels of the E and Ū groups. In all other contexts consonants have lax articulations.

2.2. Stops

Stops are produced with a complete closure of the air passage, and are grouped into plosives and affricates according to the type of release. Voiceless stops have weak aspiration.

2.2.1. Plosives

Plosives are produced with a sudden release of the completely obstructed air stream. According to the place of articulation and the state of the vocal cords, plosives are subdivided as follows:

2.2.1.1. Voiceless, bilabial plosive - \[ p \]

\[ p \] occurs in initial and final positions preceded or followed by vowels of the A, I, O and U groups. It also occurs

---

1 The feature of lip rounding is not marked in the transcription for simplicity of symbolization.

2 'Initial' and 'final' refer to syllable initial and final positions which generally coincide with word initial and final.
post-consonantly in vcc and cvcc.

\[ \text{[ paj }] \quad \text{pay} \quad 'share' \]
\[ \text{[ puá }] \quad \text{pul} \quad 'stamp' \]
\[ \text{[ süt }] \quad \text{sap} \quad 'stem' \]
\[ \text{[ kulp }] \quad \text{kulp} \quad 'handle' \]

2.2.1.2. Voiceless, palatalized, bilabial plosive—[ p ]

[ p ] is found preceded or followed by vowels of the E, i, ö, ü groups.

\[ \text{[ pis }] \quad \text{pis} \quad 'dirty' \]
\[ \text{[ pyùçs ]} \quad \text{pürük} \quad 'knobby' \]
\[ \text{[ peýs ]} \quad \text{pey} \quad 'deposit' \]
\[ \text{[ ip ]} \quad \text{ip} \quad 'string' \]
\[ \text{[ cyùp ]} \quad \text{küp} \quad 'urn' \]
\[ \text{[ öep ]} \quad \text{öp} \quad 'kiss' \]

2.2.1.3. Voiced, bilabial plosive—[ b ]

[ b ] occurs preceded or followed by vowels of A, I, O, U groups, but it does not occur in word final position.

\[ \text{[ buk }] \quad \text{bak} \quad 'look' \]
\[ \text{[ buk }] \quad \text{bik} \quad 'get fed up' \]

---

footnote cont.

there is a restriction in the position of a certain consonant this is specified, e.g. where a consonant can occur in syllable initial position only, i.e. not word initial, this is explained when that consonant is discussed, e.g. the rolled continuant, 2.5.4.

1 i.e. 'preceded or followed' within the same syllable only.
2.2.1.4. Voiced, palatalized, bilabial plosive — [ h̃ ]

[ h̃ ] occurs preceded or followed by vowels of the E, İ, ö, ü groups. It does not occur in word final position.

- [ h̃il ] bil  'know'
- [ h̃ej ] bey  'sir'
- [ h̃el ] böl  'divide'
- [ h̃ec ] bük  'bend'
- [ seh̃e ] sebze 'vegetable'
- [ cih̃i ] kibrit 'match'
- [ j̃ih̃e ] gübre 'fertilizer'

2.2.1.5. Voiceless, dental plosive — [ t̃ ]

[ t̃ ] can occur preceded or followed by vowels of the A, İ, Ö, Ü groups. It also occurs as the final consonant in cc clusters.

- [ t̃as ] tas  'cup'
- [ t̃ip ] tip  'medicine'
- [ t̃oz ] toz  'dust'
- [ kut ] kit  'scarce'
- [ but ] but  'thigh'
- [ ɔt ] ot  'grass'
- [ xal̃t ] halt  'nuisance'
- [ kart ] kart  'out of season'
2.2.1.6. Voiceless, palatalized, dental plosive — [ t̚ ]

[t̚] occurs preceded or followed by vowels of the E, İ, Ö, Ü groups.

\[
\begin{array}{ll}
[\text{t̚eç }] & \text{tek} \quad \text{'single'} \\
[\text{tip }] & \text{tip} \quad \text{'type'} \\
[\text{t̚ü̞py }] & \text{törpü} \quad \text{'nail file'} \\
[\text{t̚y̞t }] & \text{tül} \quad \text{'veil'} \\
[\text{eç }] & \text{et} \quad \text{'meat'} \\
[\text{çiçt }] & \text{cilt} \quad \text{'volume'} \\
[\text{eçt }] & \text{öt} \quad \text{'sing'} \\
[\text{çyt }] & \text{süt} \quad \text{'milk'}
\end{array}
\]

2.2.1.7. Voiced, dental plosive — [ d̚ ]

[d̚] occurs only initially and when followed by vowels of the A, I, O, U groups.

\[
\begin{array}{ll}
[\text{d̚am }] & \text{dam} \quad \text{'roof'} \\
[\text{d̚iç }] & \text{diç} \quad \text{'outside'} \\
[\text{dost }] & \text{dost} \quad \text{'friend'} \\
[\text{du̞r }] & \text{dur} \quad \text{'stop'}
\end{array}
\]

2.2.1.8. Voiced, palatalized, dental plosive — [ d̊̚ ]

[d̊̚] occurs only initially and when followed by vowels of the E, İ, Ö, Ü groups.

\[
\begin{array}{ll}
[\text{d̊̚eçt }] & \text{dert} \quad \text{'sorrow'} \\
[\text{d̊̚iç }] & \text{diz} \quad \text{'knee'} \\
[\text{d̊̚eç }] & \text{don} \quad \text{'turn'} \\
[\text{d̊̚ẙt }] & \text{düş} \quad \text{'fall'}
\end{array}
\]
2.2.1.9. Voiceless, palatal plosive – [c]¹

[c] occurs preceded or followed by vowels of the E, 
ɪ, ō, ū groups.

°Ces fres 'cut'
[ciç] kir 'dort'
[çæç] kör 'blind'
[çyl] kül 'ash'
[tæc] tek 'single'
[diç] dik 'steep'
[sæc] sök 'uproot'
[bjç] bük 'bend'

2.2.1.10. Voiceless, velar plosive – [k]²

[k] occurs preceded or followed by vowels of the A, 
I, O, U groups.

[kuy] kaz 'goose'
[kuíx] kir 'break'
[kör] kor 'glowing coal of a fire'
[kuñ] kur 'wind'
[uk] ak 'white'
[sųk] sık 'close'
[ôk] ok 'arrow'
[oluk] oluk 'gutter'

¹ See Palat. 1, p. 188.
² See Palat. 2, p. 188.
2.2.1.11. Voiced, palatal plosive - [ J ]

[J] occurs initially only when followed by vowels of the E, Ī, Ō, Ü groups.

- [ Jæj ] gel 'come'
- [ Jiŋ ] gir 'enter'
- [ Jœj ] gōl 'lake'
- [ Jyl ] gūl 'rose'

2.2.1.12. Voiced, velar plosive - [ g ]

[g] occurs initially only when followed by vowels of the A, Ī, Ō, U groups. It does not occur initially in monosyllabic words except in loan-words and onomatopoeic words. Examples of [g] in polysyllabic words are as follows:

- [ gæg ] gaga 'beak'
- [ cœtlɪŋ ] girtlak 'larynx'
- [ cœnda ] gonca 'rose bud'

2.2.1.13. Glottal Stop

Apart from its occasional use in unassimilated loanwords, the glottal stop does not usually occur in the type of Istanbul Turkish described here, although some speakers may have a glottal stop at word initial position when there is emphasis on the word, or with exclamations. Baldwin says that the glottal stop occurs

---

1 See Palat. 17, p.190.
2 See Chap 7, pp. 149-164
3 See Introduction, p.xviii.
regularly in Turkish as reinforcing oral closure of voiceless plosives or replacing them altogether, but he bases his analysis mainly on the speech of a Cypriot Turk whose Turkish is different from Istanbul Turkish. Baldwin also mentions that in the speech of some Turks, younger than his original informants, he did not notice any glottalization. This shows that the younger generations, who, through the influence of language reform, have been exposed to Arabic and Persian influence much less than the previous generations, tend not to have the glottal stop in their speech. As it is not a regular feature of Istanbul Turkish, the glottal stop is not included in the phonetic description given here.

### 2.2.2. Affricates

Affricates are produced by maximum stricture and slow release of the air stream so that friction is heard on the release. The friction and occlusion are homorganic. Affricates are classified, according to the place of articulation and the state of the vocal cords, as follows:

#### 2.2.2.1. Voiceless, palato-alveolar affricate — \[\psi\]¹

\[\psi\] occurs preceded or followed by vowels of any of the eight groups ², but in the vicinity of front vowels, i.e., vowels of the E, İ, Ö, Ü groups, it has a more palatal articulation as is the case with the other consonants. However, palatalization is not marked in the phonetic transcription for

---

¹ See Palat. 17, p. 190.

² Vowels of the A, E, I, İ, O, Ö, Ü, Ü groups.
simplicity of symbolization. It can also occur as the final consonant of the cluster in voc. [ʧæl] çel 'attract'
[ʧiç] çiz 'draw'
[ʧyʒɔ] çüürük 'rotten'
[ʃɛʃ] seq 'choose'
[ɪɾ] iq 'drink'
[ʃukʌ] çukur 'ditch'
[koʃ] koç 'ram'
[uɾ] uç 'fly'
[xarʃ] harç 'trimmings'

2.2.2.2. Voiced, palato-alveolar affricate - [ʤ]

[ʤ] occurs only initially, and may be followed by any of the vowels of the A, E, I, İ, O, Ö, U, Ü groups. In the vicinity of front vowels it has a more palatal articulation which is not marked in the transcription.

[ʤan] can 'life'
[ʤep] cep 'pocket'
[ʤimɾi] cimri 'miser'
[ʤɔʃ] çoş 'be merry'
[ʤemɾiɾ] cömert 'generous'
[ʌɾuʃ] ucuz 'cheap'
[adʒ] acı 'bitter'

1 This also applies to the voiced palato-alveolar affricate [ʤ], the voiceless and voiced palato-alveolar sibilant continuants [ʃ], [ʒ], and the voiced, palatal frictionless continuant [j].
2.3. Nasals

Nasals are produced by the articulators forming a stricture of complete closure, but without a simultaneous velic closure. Thus the air stream which is obstructed in the mouth is expelled through the nose. The vowels which precede nasals in the following contexts are nasalized:

i. vowel + nasal\(^1\), e.g.
   [ɔ̆ɲ] ön 'front'
   [үn] an 'moment'

ii. nasal + vowel + nasal\(^2\), e.g.
   [mũm] mum 'candle'
   [xanũm] hanım 'lady'

iii. c + vowel + nasal + stop\(^3\), e.g.
   [xẽɲ] genç 'young'
   [sũɲũ] süngü 'bayonet'

iv. c + vowel + nasal + sibilant\(^4\), e.g.
   [dũns] dans 'dance'
   [fãns] şans 'luck'

v. c + vowel + nasal + [j]\(^5\), e.g.
   [bũmja] bamyə 'okra'

In similar contexts, i.e. nasal + [j], there is no contact for the nasal except where it is a bilabial nasal as in [bũmja] which can be compared to [bũjye] bünüys 'structure'
   [oũjye] künüys 'patronymic'\(^6\) except in an emphatic style of speech.

---

\(^1\) See Mingo. 1, p. 197.
\(^2\) See Mingo. 2, p.
\(^3\) See Mingo. 3, p.
\(^4\) See Mingo. 4, p. 198.
\(^5\) See Mingo. 6, p.
\(^6\) See Mingo. 5, p.
Vowel nasality is not marked in the rest of the phonetic transcription as the contexts in which it occurs have been given above.

2.3.1. Voiced, palatalized, bilabial nasal - [ m ]

[m] occurs preceded or followed by vowels of the E, ï, ö, ü groups.

\[
\begin{align*}
\text{[ melëc ]} & \quad \text{melek} & \quad \text{angel} \\
\text{[ mįl̪ ]} & \quad \text{mil} & \quad \text{thin, iron bar} \\
\text{[ ḫom̪ ]} & \quad \text{göm} & \quad \text{bury} \\
\text{[ tŷm̪ ]} & \quad \text{tüm} & \quad \text{all}
\end{align*}
\]

2.3.2. Voiced, bilabial nasal - [ m ]

[m] occurs preceded or followed by vowels of the A, I, O and U groups. It can also occur preconsonantally in cvcc type.

\[
\begin{align*}
\text{[ mal̪ ]} & \quad \text{mal} & \quad \text{property} \\
\text{[ mu̞mär̪ ]} & \quad \text{misir} & \quad \text{corn} \\
\text{[ som̪ ]} & \quad \text{som} & \quad \text{pure} \\
\text{[ mum̪ ]} & \quad \text{mum} & \quad \text{candle} \\
\text{[ zəm̪k ]} & \quad \text{zamk} & \quad \text{glue}
\end{align*}
\]

2.3.3. Voiced, palatalized, denti-alveolar nasal - [ n ]

[n] occurs preceded or followed by vowels of the E group.

\[
\begin{align*}
\text{[ ben̪ ]} & \quad \text{ben} & \quad \text{I} \\
\text{[ nesne ]} & \quad \text{nesne} & \quad \text{thing} \\
\text{[ en̪ ]} & \quad \text{en} & \quad \text{width}
\end{align*}
\]

2.3.4. Voiced, denti-alveolar nasal - [ n ]

[n] occurs preceded or followed by vowels of the A, I, O and U groups.

---

1 See Palat. 15, p.190.
2 See Palat. 16, p. " ".
2.3.5. Voiced, palatal nasal — [ɲ]

[ɲ] occurs preceded or followed by vowels of the İ, Ö, Ü groups.

[ɲiye] niyet 'intention'
[ɲyot] nükte 'joke'
[ɲi] in 'den'
[ɲun] ün 'fame'
[ɲen] ön 'front'

2.3.6. Voiced, pre-velar nasal — [ɳ]

[ɳ] occurs followed by a voiced or voiceless palatal plosive, i.e. [ɾ] or [c], and preceded by a front vowel.

[ɾəŋi] zengin 'rich'
[ɾənc] renk 'colour'
[ɾyːɾı] sünğü 'bayonet'

2.3.7. Voiced, velar nasal — [ŋ]

[ŋ] occurs followed by a voiced or voiceless velar plosive, i.e. [g] or [k], and preceded by a back vowel.

[ɾbəŋka] banka 'bank'
[ɾkəŋgal] kangal 'coil'
[ɾsʊŋgur] sungur 'falcon'
2.4. Sibilant Continuants

Sibilant continuants are produced by the blade of the tongue being raised to the hard palate, and by the narrowing of the air passage which results in friction and a hissing sound, i.e. sibilance, as air from the lungs passes through the vocal tract. Sibilants are classified as follows:

2.4.1. Voiceless, palatalized, alveolar sibilant — [ s ]

[ s ] occurs preceded or followed by vowels of the E, ï, ō, and ū groups. It also occurs as the first consonant of clusters in vcc and cvcc.

\[
\begin{align*}
[ \text{sæl} ] & \quad \text{sel} \quad \text{'flood'} \\
[ \text{sil} ] & \quad \text{sil} \quad \text{'wipe'} \\
[ \text{søz} ] & \quad \text{søz} \quad \text{'speech'} \\
[ \text{søt} ] & \quad \text{søt} \quad \text{'milk'} \\
[ \text{ce̟} ] & \quad \text{ce̟} \quad \text{'cut'} \\
[ \text{pi̟} ] & \quad \text{pi̟} \quad \text{'dirty'} \\
[ \text{yi̟} ] & \quad \text{yi̟} \quad \text{'top'}
\end{align*}
\]

2.4.2. Voiceless, alveolar sibilant — [ s ]

[ s ] occurs preceded or followed by vowels of the A, I, O and U groups. It also occurs as the first consonant of clusters in vcc and cvcc.

\[
\begin{align*}
[ \text{søt} ] & \quad \text{søt} \quad \text{'sell'} \\
[ \text{sum} ] & \quad \text{sum} \quad \text{'secret'}
\end{align*}
\]

1 See Palat.3,p.188.
2 See Palat.4, "

2.4.3. Voiceless, palato-alveolar sibilant [ʃ] ¹

[ʃ] occurs preceded or followed by vowels of any of the eight groups. It also occurs preconsonantly in cvcc. In the vicinity of front vowels, [ʃ] has a more palatal articulation which is not marked in the transcription.

[ʃap] şap 'a salty chemical'
[ʃe] şey 'thing'
[ʃi] şilte 'mattress'
[ʃölen] şölen 'feast'
[ʃuk] şûk 'elegant'
[ʃu] şu 'that'
[kşʃ] koş 'run'
[taʃ] taş 'stone'
[leʃ] leş 'carcass'
[şvʃ] duş 'dream'
[coʃʃ] koğk 'mansion'

¹ See Palats. 5 and 6, p.188.
2.4.4. Voiced, palatalized, alveolar sibilant [ʒ].

[ʒ] occurs preceded or followed by vowels of E, İ, Ö and Ü groups.

- [ʒerde] zerde 'apricot'
- [ʒil] zil 'bell'
- [ʒüzüm] üzüm 'grapes'
- [ʒızı] ızı 'trail'
- [ʒüz] öz 'essence'
- [ʒüz] ızız 'constrict'

2.4.5. Voiced, alveolar sibilant [z].

[z] occurs preceded or followed by vowels of the A, İ, O and U groups.

- [zatı] zatı 'opposite'
- [zor] zor 'difficult'
- [uzun] uzun 'long'
- [zar] zar 'dice'
- [az] az 'little'
- [kızı] kızı 'girl'
- [tozı] tozı 'dust'
- [tuızı] tuızı 'salt'

[ʒ] and [z] have some devoicing at word final position, but not as much as to consider them as voiceless.

---

1 See Palat. 7, p.189.
2 See Palat. 8, " .
3 For instrumental evidence see Spec. 1, p.191. Devoicing is not shown in the phonetic transcription for simplicity of symbolization.
2.4.6. Voiced, palato-alveolar sibilant [ʒ]

[ʒ] occurs preceded or followed by vowels of A, E, ɪ, ŕ and ü groups and it has a more palatal articulation in the vicinity of front vowels\(^1\). Its occurrence is limited to unassimilated loanwords\(^2\).

2.5. Non-sibilant Continuants

Non-sibilant continuants are produced by a slow release of the partially obstructed air stream without any sibilance. They are grouped as:

i. fricatives
ii. frictionless continuants
iii. laterals
iv. rolled continuants
v. flapped continuants

2.5.1. Fricatives

Fricatives are produced with a close approximation of the articulators thus producing audible friction as the air passes through the vocal tract. According to the place of articulation and the state of the vocal cords, fricatives are subdivided as follows:

2.5.1.1. Voiceless, palatalized, bilabial fricative [ɸ]

[ɸ] occurs preceded or followed by vowels of the ŕ and ü groups.

[œʃtɛ] köfte 'hamburger'
[œʃ] küf 'mould'

\(^1\) See 2.2.2.1.
\(^2\) For examples of [ʒ] in various contexts, see 3.2.iii.
2.5.1.2. Voiceless, bilabial fricative \([ \phi ]\)

\([ \phi ]\) occurs preceded or followed by vowels of \(O\) and \(U\) groups.

\([	ext{çundu}]\) funda 'heath'
\([	ext{uğuk}]\) ufuk 'horizon'
\([	ext{kof}]\) kof 'hollow'

2.5.1.3. Voiceless, palatalized, labio-dental fricative \([ \chi ]\)

\([ \chi ]\) occurs preceded or followed by vowels of the \(E\) and \(ı\) groups.

\([	ext{fil}]\) fil 'elephant'
\([	ext{felek}]\) felek 'fate'

2.5.1.4. Voiceless, labio-dental fricative \([ f ]\)

\([ f ]\) occurs in the contexts where it is preceded or followed by vowels of the \(A\) and \(I\) groups.

\([	ext{fal}]\) fal 'fortune telling'
\([	ext{af}]\) af 'forgiveness'
\([	ext{sınıf}]\) sınıf 'class'

2.5.1.5. Voiceless, palatal fricative \([ q ]\)

\([ q ]\) occurs preceded or followed by vowels of the \(E\), \(ı\), \(ö\) and \(ü\) groups,

\([	ext{her}]\) her 'each'
\([	ext{hiç}]\) hiç 'none'
\([	ext{hur}]\) hür 'free'
\([	ext{hörguç}]\) hörguç 'hump'
\([	ext{ehliyet}]\) ehliyet 'ability'

\(^1\) See Spec. 3, p.192.
2.5.1.6. Voiceless, velar fricative \([ x ]\)

\([ x ]\) occurs preceded or followed by vowels of the A, I, O and U groups. Velar friction is weak during the production of \([ x ]\). In the spectrogram with vowels of the U group \([ x ]\) shows a stretch on the voice bar that looks like voicing, but this seems to be due to breathy onset + close lip rounding rather than voicing.

\([ x u s t u ]\) hasta 'sick'
\([ x ? s \] hoq 'pleasant'
\([ x u j ]\) huy 'habit'
\([ x u s ]\) hirs 'anger'

2.5.1.7. De-voiced, post-alveolar flapped fricatives

In absolute final position, flapped consonants 3 are devoiced and have friction in their production 4. They may therefore be classed as fricatives.

2.5.1.7.1. De-voiced, palatalized, post-alveolar, flapped fricative \([ j ]\)

\([ j ]\) occurs finally preceded by vowels of the E, İ, Ö and Ü groups 6.

\([ j æ j ]\) ger 'stretch'
\([ ci æ ]\) kir 'dirt'

---

1 See Spec. 4. p.192.
3 See 2.5.5.
5 See Palat. 9. p.189.
6 \([ j ]\) is preceded by a vowel of the A group in a few unassimilated words, for which see 3.2.1v.
Frictionless continuants are produced with open approximation of the articulators with central passage of the air stream, so that no audible friction is produced. Frictionless continuants are sub-divided as follows.

2.5.2.1. Voiced, palatalized, bilabial frictionless continuant \[ \text{Voiced bilabial frictionless continuant} \]

\[ \text{[w]} \] occurs preceded or followed by vowels of the 0 and U groups.

\[ \text{[w]u\text{x}} \] \text{vur} 'hit'
2.5.2.3. Voiced, palatalized, labio-dental frictionless continuant [ γ ].

[ γ ] occurs preceded or followed by vowels of the E and ï groups. It also occurs as the first consonant of the cluster in cvcc.

[ γeγeγ ] verev 'diagonal'
[ γj/γe ] viγne 'cherry'
[ fογeγ ] görev 'duty'
[ ίγεγc ] zevk 'pleasure'

2.5.2.4. Voiced, labio-dental frictionless continuant [ v ].

[ v ] occurs preceded or followed by vowels of the A and ï groups. It does not occur in word final position preceded by a vowel of the ï group.

[ vaγ ] var 'there is'
[ kuvk ] kavak 'poplar'
[ kuvjected ] kivilcim 'spark'
[ νιγ ] av 'prey'

2.5.2.5. Voiced, palatal frictionless continuant [ j ].

[ j ] occurs preceded or followed by any of the vowels of the eight groups. It has a more palatal articulation in the vicinity of front vowels. In absolute final position [ j ] is slightly devoiced, for which see Spec. 5, p.193.

1 See p.17, footnote 1.
2.5.3. Laterals

In the production of the laterals the airstream is obstructed in the centre of the vocal tract by a stricture of complete closure, but escapes round the sides of the obstruction. The laterals are subdivided as follows:

2.5.3.1. Voiced, denti-alveolar lateral \[ \text{l} \]

\[ \text{l} \] occurs in syllable initial position followed by \[ \text{a} \] or \[ \text{u} \] provided that the syllable is not the initial syllable in a word.

\[ \text{salak} \] salak 'stupid'
\[ \text{palamut} \] palamut 'small tunny'
\[ \text{hala} \] hala 'aunt'

2.5.3.2. Voiced, palatalized, denti-alveolar lateral \[ \text{l} \]

\[ \text{l} \] occurs in the following contexts:

i. in syllable initial or final position preceded or followed by a vowel of the E, i, o, ü groups.

\[ \text{leq} \] leq 'carcass'

---

\(^1\) See Palat. 13, p.190.

\(^2\) For the contexts where \[ \text{l} \] occurs with a back vowel see loanwords, 3.2.\text{v}.
ii. in monosyllabic words of voc type as the first consonant of the cluster.

[ i̞lc ] ilk 'first'
[ o̞lt̞̊̊̊ ] ölt̞̊̊̊ 'measure'

2.5.3.3. Voiced, velarized, denti-alveolar lateral [ ʁ ]

[ ʁ ] occurs preceded or followed by vowels of the A, I, O and U groups. It can also occur as the first consonant of the cluster in voc and cvcc types followed by a voiceless plosive and preceded by a back vowel.

[ kɔ̞t̞̊̊̊ ] kol 'arm'
[ ku̞t̞̊̊̊ ] kul 'servant'
[ ba̞t̞̊̊̊ ] bal 'honey'
[ kɔ̞t̞̊̊̊ ] kil 'hair'
[ u̞t̞̊̊̊ ] ulu 'high'
[ γt̞̊̊̊t̞̊̊̊ ] ılık 'warm'
[ alt̞̊̊̊ ] alt 'bottom'
[ xa̞t̞̊̊̊ ] halk 'people'

2.5.4. Rolled Continuants

The rolled continuants are produced by the repeated striking of the active articulator against the passive articulator.

---

1 See Palat.: 14, p.190.
During the production of rolled continuants in Istanbul Turkish, the tip of the tongue strikes against the hard palate. These consonants occur only in syllable initial position when preceded and followed by vowels, i.e. between two vowels.

2.5.4.1. Voiced, palatalized, alveolar rolled continuant \([\gamma]\)¹

\([\gamma]\) occurs in intervocalic positions preceded and followed by vowels of the E, İ, Ö and Ü groups.

\([\text{id}_i] \) ıri 'large'
\([\text{id}_e\text{y}']\) dere 'stream'
\([\text{id}_o\text{y}']\) tören 'ceremony'
\([\text{id}_u\text{y}']\) türüm 'creation'

2.5.4.2. Voiced, alveolar, rolled continuant \([\rho]\)²

\([\rho]\) occurs in intervocalic positions preceded and followed by vowels of the A, I, O and U groups.

\([\text{id}_u\text{y}']\) arı 'bee'
\([\text{id}_u\text{b}u']\) araba 'cart'
\([\text{id}_u\text{r}u\text{ğ}']\) kırık 'broken'
\([\text{id}_u\text{r}u']\) kuru 'dry'
\([\text{id}_o\text{r}u']\) koru 'small woods'

2.5.5. Flapped Continuants.

The flapped continuants are produced with the active articulator striking in passing against the passive one. The active and passive articulators are the tip of the tongue and

¹ See Palat. II, p.189.
² See Palat. II, p. 11.
the hard palate respectively. The flapped continuants can occur in all contexts except in syllable initial position preceded and followed by vowels\(^1\), and in absolute final position, in which case flapped continuants are devoiced and have some friction in their production, and may therefore be classed as fricatives\(^2\).

2.5.5.1. Voiced, palatalized, post-alveolar flap \([ \text{j} ]\)

\([ \text{j} ]\) occurs followed by vowels of the E, ĭ and ĭ groups.

\([ \text{çenç} ]\) renk 'colour'
\([ \text{çiçc} ]\) risk 'danger'
\([ \text{çiyet} ]\) rüşvet 'bribe'

2.5.5.2. Voiced, post-alveolar flap \([ \text{x} ]\)

\([ \text{x} ]\) occurs followed by vowels of the A, I, O and U groups.

\([ \text{çaj} ]\) ray 'rail'
\([ \text{çxtum} ]\) rihtim 'pier'
\([ \text{çomun} ]\) roman 'novel'
\([ \text{çux} ]\) ruh 'spirit'

2.6. Consonant Chart

Consonants which have been analysed in the above sections are shown on a chart on p. 49. Although a few of them are not relevant for Istanbul Turkish, all the places of articulation given on the IPA chart have been included here, thus making it possible to see at a glance those consonants that do and those that do not occur in this particular style. Palatalization is not included in the chart in order not to obscure the picture.

---

\(^1\) See rolled continuants, 2.5.4.
\(^2\) See 2.5.1.7.
<table>
<thead>
<tr>
<th></th>
<th>Glottal</th>
<th>Pharyngeal</th>
<th>Uvular</th>
<th>Velar</th>
<th>Palatal</th>
<th>Alveo-palatal</th>
<th>Palato-alveolar</th>
<th>Retracted</th>
<th>Palatal and Labio- dental</th>
<th>Labio-dental</th>
<th>Bilabial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stop</strong></td>
<td>p</td>
<td>b</td>
<td>m</td>
<td>s</td>
<td>z</td>
<td>s</td>
<td>f</td>
<td>θ</td>
<td>v</td>
<td>l</td>
<td>r</td>
</tr>
<tr>
<td><strong>Nasal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sibilant Continuous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fricative</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Frictionless Continuous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Sibilant Continuous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rolled</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flapped</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.7. Summary of the Relations between Vowels and Consonants

The phonetic descriptions given so far indicate underlying relationships between certain vowel and consonant groups. Going through these descriptions it becomes noticeable that vowels behave in similar ways in relation to palatal, palatalized, and non-palatal consonants in stop, nasal, sibilant and non-sibilant continuant groups. These relationships within cvc type monosyllabic words can now be summarized below under the heading of various vowel groups. The phonetic forms of the consonants are grouped together to enable easy reference to them when, in the following chapters, phonetic exponents are given for the terms of the consonantal subsystems in the phonology. This also matches with the grouping of vowels. The grouping is as follows:

- [p, p] - P group, [b, b] - B group, [t, t] - T group,
- [d, d] - D group, [j, g] - G group, [c, k] - K group,
- [y] - Ç group, [a] - C group, [m, n] - M group, [η, j, n, y, η] - N group, [s, m] - S group, [f] - Å group,
- [z, s] - Z group, [i] - J group, [t, t, k, f] - F group,
- [m, n, h] - V group, [g, x] - H group, [j] - Y group,
- [l, l, f] - L group, [y, r, j, x] - R group.

I. A Group

i. Palatal + A + Palatal → [ᶓ, ᵃ] + [ᶓ, ᵃ, j] + [ᶓ, ᵃ, j].

ii. a) Palatal (ᶓ, ᵃ, ᵃ, Y) + A + Non-palatal → [ᶓ, ᵃ, ᵃ, j] + [ᶓ, ᵃ] + Non-palatal.

   b) Non-palatal + A + Palatal (ᶓ, ᵃ, Y) → Non-palatal + [ᶓ, ᵃ] + [ᶓ, ᵃ, j].
iii. Non-palatal + A + Non-palatal (R) \(\rightarrow\) Non-palatal + [a] + [r] .

iv. Non-palatal + A + Non-palatal (P, T, K, N, M)

\(\rightarrow\) Non-palatal + [u] + [p, t, k, n, m].

v. Non-palatal + A + Non-palatal (S, Z, F, V)

\(\rightarrow\) Non-palatal + [u] + [s, z, f, v].

vi. Non-palatal + A + Non-palatal (L)

\(\rightarrow\) Non-palatal + [a] + [l].

II. E Group

i. Palatal or palatalized + E + Palatalized (L)

\(\rightarrow\) Palatal or palatalized + [æ]+[u].

ii. Palatal or palatalized + E + Palatalized (R)

\(\rightarrow\) Palatal or palatalized + [æ]+[u].

iii. Palatal or palatalized + E + Palatalized (M, N)

\(\rightarrow\) Palatal or palatalized + [e]+[m, n].

iv. a) Palatal or palatalized + E + Palatal (Ç, Ş, Ý)

\(\rightarrow\) Palatal or palatalized + [e]+[j].

b) Palatalized N, B + E + Palatalized (M, L)

\(\rightarrow\) [n, b] + [e] + [m, n].

v. Palatal or palatalized + E + Palatalized (P, T, V, F, S, Z)

\(\rightarrow\) Palatal or palatalized +[e]+[p, t, y, s, z].

vi. Palatal or palatalized + E + Palatal (K)

\(\rightarrow\) Palatal or palatalized + [e] + [e].
III. I, O, U Groups

i. Palatal or non-palatal + O + Palatal (Q, S, Y, L)

\[ \rightarrow \text{Palatal or non-palatal} + Q + \{ \psi, \phi, j, \hat{i}, \hat{u} \}. \]

ii. Palatal or non-palatal + O + Non-palatal (P, T, K, M, N, R, H, V, F)

\[ \rightarrow \text{Palatal or non-palatal} + Q + \{ p, t, k, m, n, x, x, f \}. \]

iii. Palatal or non-palatal + O + Non-palatal (S, Z)

\[ \rightarrow \text{Palatal or non-palatal} + Q + \{ s, z \}. \]

IV. Ī, Ī, Ū Groups

i. Palatal or palatalized + Ū + Palatal or palatalized (Q, S, Y, L)

\[ \rightarrow \text{Palatal or palatalized} + Q + \{ \psi, \phi, j, \hat{i}, \hat{u} \}. \]

ii. Palatal or palatalized + Ū + Palatalized (P, T, M, F, R, V, N)

\[ \rightarrow \text{Palatal or palatalized} + Q + \{ p, t, k, m, n, x, x, f \}. \]

iii. Palatal or palatalized + Ū + Palatal or palatalized (S, Z, K)

\[ \rightarrow \text{Palatal or palatalized} + Q + \{ s, z, c \}. \]
2.8. Intra-word Harmony

The phonetic descriptions and transcriptions of the examples in the preceding chapters have already indicated an interesting feature of Turkish, viz. harmony. This is not only confined to vowels but covers consonants as well.

With a few exceptions like,

\[
\begin{align*}
[\text{unje}] & \text{ anne } 'mother' \\
[\text{s}lmw] & \text{ elma } 'apple'
\end{align*}
\]

there is harmony between syllables within native or assimilated Turkish words \(^1\), and the whole utterance has frontness or backness throughout \(^2\). This becomes apparent when the occurrence of palatal and palatalized consonants in the vicinity of front vowels, and non-palatal consonants in the vicinity of back vowels is considered. Harmony of frontness/backness is accompanied by labial harmony, i.e. lip-rounding, if the first syllable has lip-rounding and the vowels of the subsequent syllables are close. Otherwise either the whole word is non-rounded, or when the following syllables have open vowels only the first syllable is rounded. An exception to this is when the first vowel is a vowel of the A group and is followed by one of the following labial consonants \([b, p, m, w]\) as syllable initials.

---

\(^1\) See Chapter 3, pp. 55-61, for unassimilated loanwords.

\(^2\) Except where 'yor' and 'ken' occur as suffixes for which see Chapter 6, pp. 125+124 respectively.
In such cases labiality of these sounds can effect the following vowel, e.g.

- [subun] sabun 'soap'
- [kaput] kaput 'army coat'
- [xamux] hamur 'pastry'
- [kawur] kavur 'fry'
3.1. Introduction

Loanwords in Istanbul Turkish may be grouped into two classes:

i. Assimilated

ii. Unassimilated

In the natural flow of the language some loanwords, by virtue of their constant usage and by their phonetic and phonological features, do not strike the native speaker as being different from words of native origin. Such loanwords are considered to be assimilated, and are treated on the same basis as native Turkish words though historically they are borrowings. Unassimilated loanwords on the other hand, have various characteristics which cause them to be regarded as different from native words.

3.2. Unassimilated Loanwords

The following sub-sections exemplify the basis on which loanwords are treated as unassimilated:

i. Words with an initial consonant cluster as in the examples below:

Monosyllabic

[spər] spor 'sports'

For the phonological structures of unassimilated loanwords see sections on unassimilated-loan noun and adjective roots, Chapter 4, pp. 83-90 and 102.
Disyllabic

**ccvc - cvc**

[pl ast ic] plastik 'plastic'

[fl ast e r] flaster 'plaster'

[truk t o r] traktör 'tractor'

**ccvc - cv**

[pl az mu ] plazma 'plasm'

**ccv - cv**

[tr iko] triko 'knitted fabric'

**ccv cvo**

[klas o r] klasör 'file'

[kpl a o r] planör 'glider'

No such initial clusters are possible in native Turkish words, and the words listed above have alternative pronunciations with a vowel separating the initial cluster, e.g.

[tı r e n] tren 'train'

[sıpo r] spor 'sports'

[kı l a s o r] klasör 'file'

**ii. Words with a final voiced stop.** There are some exceptions,
i.e. some words in constant use where the voiced bilabial plosive in syllable final position is followed by a voiced sibilant, or a lateral, or a flapped continuant, i.e. - [ b ] + [ z, l, r ] - - [ ʃ ] + [ ž, š, ž ] -
are not treated as loans because of their frequent usage, e.g.

- [ ʃeβe ] sebzə 'vegetable'
- [ ciŋiʃ ] kibrīt 'match'
- [ uβla ] abla 'sister'

Examples of unassimilated loanwords with a syllable final stop are as follows:

- [ bug]lə ] bagle 'she mule'
- [ mʊbrəm ] mübrem 'urgent'
- [ mʊrdiʃ ] müdrık 'perceiving'

iii. Words with an initial or final voiced palato-alveolar sibilant, i.e. [ z ]\(^1\). This sound does not occur in native Turkish words in the style of speech described here. Loanwords having this sound are few in number, and most of them are infrequently used in everyday language.

- [ zilentʃ ] jilet 'razorblade'
- [ zicleteʃ ] jiklet 'chewing gum'
- [ ʒolə ] jôle 'jelly'
- [ garuz ] garaj 'garage'
- [ wʒun ] ajan 'agent'

\(^1\) See 2.4.6.
The very alien nature of this sound is more apparent when the wide-spread use of [ $\text{d}_t$ ] instead of [ z ] in word-initial position is considered, as in:

- [ $\text{d}_t\text{ilet}$ ] for [ z\text{ilet} ]
- [ $\text{d}_t\text{iclet}$ ] for [ z\text{iclet} ]

iv. Words with initial voiced or voiceless palatal plosive, i.e. [ $\text{z}$ ] and [ $\text{c}$ ] followed by [ a ] or [ a: ].

- [ $\text{cyz}\text{iq} $ ] rüzgâr 'wind'
- [ $\text{ca}\text{x}\text{ix}$ ] kârgir 'wooden'
- [ $\text{ca}\text{z}$ ] kâr 'profit'
- [ $\text{ca}\text{z}\text{if}$ ] kâşif 'explorer'

Such words are few in number, and in the orthography the palatalizing of the initial consonant is indicated by the circumflex accent placed on the following vowel as in the examples given above.

v. A limited number of words in which the voiced palatalized lateral, i.e. [ $\text{z}$ ], is:

a) preceded or followed by [ $\text{y}$ ].

b) preceded or followed by [ a ].

Examples:

a) [ $\text{z}\text{ol}$ ] rol 'role'
- [ $\text{z}\text{ol}$ ] gol 'goal'
- [ $\text{b}\text{ol}$ ] bol 'fruit punch'
- [ $\text{x}\text{ol}$ ] hol 'entrance hall'
- [ $\text{lo}\text{ca}$ ] loca 'box (in theatre, etc.)

b) [ $\text{laf}$ ] lâf 'speech'

---

1 The circumflex accent is also used to mark a long vowel in loanwords of Arabic or Persian origin, though there is a tendency to use it less and less. See G.L. Lewis, 'Turkish Grammar', p.2, para. 3.
vi. Words with a vowel of the 0 group in a syllable other than the first¹, e.g.

- [konsolos] konsolos 'consul'
- [azot] azot 'nitrogen'
- [kilo] kilo 'kilogramme'
- [koro] koro 'chorus'
- [sarampol] sarampol 'ditch'
- [gondol] gondol 'gondola'

vii. Words with long vowels except:

a) when the word can have an alternative pronunciation with the long vowel being replaced by vowel + voiced palatal frictionless continuant, e.g. [tyː] or [tyː] for tuy 'feather'.

b) where in the orthography the long vowel is represented as 'vowel + ː', e.g. [daː] has the orthographic form 'dağ'.

Examples of unassimilated words with long vowels are as follows:

- [märuf] märuf² 'well known'
- [hata] hata 'mistake'
- [gida] gida 'food'
- [tesir] tesir 'influence'
- [feći] feći 'horrible'

¹ This does not apply to suffixed forms, onomatopoeic words and compound words.

² See p.58, footnote 1.
viii. Non-harmonic words: Words which do not have harmony between syllables are mostly considered unassimilated loanwords, apart from the exceptions given in 2.8.

Examples of non-harmonic loanwords are as follows:

- [kuँm] kalem 'pencil'
- [tukyin] takvim 'calendar'
- [cîryz] kiraz 'cherry'
- [Jynux] günah 'sin'
- [fɔb|i] fobi 'phobia'

ix. Apart from the above mentioned characteristics, some words are considered unassimilated loanwords by intuition. Such words are few in number, and usually represent things for which there are already widely used native or assimilated loanwords in colloquial speech. For example:

Unassimilated loanwords

1. [mʊbli] möble 'furniture'
2. [bûfe] büfe 'chest of drawers'
3. [əlyans] alyans 'wedding ring'

their synonyms

1. [takım] takım 'furniture'
2. [dolap] dolap 'chest of drawers'
3. [halka] halka 'wedding ring'

It can now be stated that a word which has any of the features given above is classed as an unassimilated loanword. Some words exhibit more than one of these features, and as in such cases they retain a greater part of the phonetic features of the word in the language from which they have been borrowed, their
non-native origin is all the more apparent. For example, the word

\[ \text{biyoloji} \]

'biology'
is an unassimilated loanword, because:

a) it is non-harmonic

b) vowels of the O group occur in non-initial syllables

c) the word has the consonant \[ \mathbf{3} \] in it,

and

\[ \text{hidrat} \]

'hydrate'
is an unassimilated word, because:

a) \[ \mathbf{q} \] occurs in syllable final position

b) the word is non-harmonic.
CHAPTER FOUR

Root Structures

4.1. Introduction

In this chapter root structures of nouns, adjectives and verbs are analysed\(^1\). The reason why the analysis is confined mainly to these classes is that the greater part of the Turkish vocabulary appears to fall into them, and also, because of the greatly varied structure of words of these classes, whatever is said of their phonetic and phonological features, in most cases holds true for the rest. Explanations are given for notable exceptions in the course of description within the appropriate sections.

As mentioned above, it is the root forms which are taken up in this chapter, the root being that part of a word structure which is left when all the affixes have been removed\(^2\). Roots are mainly monosyllabic and disyllabic.

4.1.1. Prosodies of the Root

The following prosodies are set up for the structure of the noun, adjective and verb roots.

\( \gamma \) prosody: phonetic exponent is frontness

---

\(^1\) The grammatical classifications referred to throughout this thesis are based in the main on G.L. Lewis' 'Turkish Grammar', 1967. However, Lewis does not make a distinction between the terms root and stem. He uses the term stem for what is taken as the root in this thesis for the purposes of the analysis. See footnote 2 below.

\(^2\) See R.H. Robins, 'General Linguistics: An Introductory Survey', pp. 206–213, where the definition that is given is applicable to Turkish.
w prosody: phonetic exponent is backness
r prosody: phonetic exponent is rounding
r prosody: phonetic exponent is non-rounding
h prosody: phonetic exponent is voiceless onset and/or ending.
h prosody: phonetic exponent is voiced onset and/or ending, except in case of P systems when exponent is voicelessness.

These are described in relation to syllabic structure which is described in terms of C and V systems. With the exception of some unassimilated loan roots, y/w prosodies operate throughout the whole root, e.g.

\[ yCVC \quad [ \text{jel} ] \quad \text{gel} \quad 'come' \]

\[ wCVC \quad [ \text{tuz} ] \quad \text{tuz} \quad 'salt' \]

\[ yCV-CVC \quad [ \text{jelj}i^f] \quad \text{genis} \quad 'wide' \]

\[ wCV-CVC \quad [ \text{kadûn} ] \quad \text{kadin} \quad 'woman' \]

Unassimilated-loan roots of various structures can be y prosodic onset/w prosodic ending, or v prosodic onset/y prosodic ending, e.g.

\[ yCVC-WCV \quad [ \text{meçmua} ] \quad \text{meçmua} \quad 'magazine' \]

\[ wCVC^Y \quad [ \text{gol} ] \quad \text{gol} \quad 'goal' \]

h/h prosodies are not necessarily the same at syllable onset and syllable ending, i.e. for example, a verb root of CVC structure can be:

---

1 See N. Waterson, 'Some Aspects of the Phonology of the Nominal Forms of the Turkish Word', BSOAS, 18, 1956, pp. 580–581.

2 In polysyllabic examples change in prosody is shown at the onset of the following syllable, but in monosyllabic examples, at the end of the syllable.
\[ h_{CVC}^{h} \quad [ \text{set} ] \quad \text{seq} \quad '\text{choose}' \]
\[ h_{CVC}^{h} \quad [ \text{kal} ] \quad \text{kal} \quad '\text{stay}' \]
\[ h_{CVC}^{h} \quad [ \text{vur} ] \quad \text{vur} \quad '\text{strike}' \]
\[ h_{CVC}^{h} \quad [ \text{jet} ] \quad \text{geq} \quad '\text{pass}' \]

\( r/r \) prosodies operate, in the main, throughout the whole root, e.g.

\[ r_{CVC} \quad [ \text{düz} ] \quad \text{düz} \quad '\text{straight}' \]
\[ r_{CVC} \quad [ \text{dik} ] \quad \text{dik} \quad '\text{steep}' \]
\[ r_{CV-CVC} \quad [ \text{çocuk} ] \quad \text{çocuk} \quad '\text{child}' \]
\[ r_{CV-CVC} \quad [ \text{temel} ] \quad \text{temel} \quad '\text{foundation}' \]

There are however polysyllabic structures which can be \( r \) beginning and \( r \) ending, e.g.

\[ r_{CV-FVC} \quad [ \text{jörey} ] \quad \text{görev} \quad '\text{duty}' \]

or \( r \) beginning and \( r \) ending\(^1\), e.g.

\[ F_{CV-FVC} \quad [ \text{kuvur} ] \quad \text{kuvur} \quad '\text{fry}' \]

The relations of \( y/w \), \( r/r \) prosodies to vowel grades are dealt with in \( 4.1.2.1 \).

### 4.1.2. V Systems

A two term V system is set up for the vocalic element of structure in relation to the vowel grade for all roots.

- \( \alpha \) : phonetic exponent openness\(^2\)
- \( \iota \) : phonetic exponent closeness\(^3\)

---

\(^1\) See 4.1.2.1.

\(^2\) See vowels of A, E, O, Ō groups, Chapter 1.

\(^3\) See vowels of I, Ī, U, Ū groups, Chapter 1.
Both grades of openness can be found in monosyllabic roots, e.g.

\[\alpha C \text{ al} \quad 'take'\]

\[\iota C \text{ it} \quad 'push'\]

In polysyllabic roots, grades of openness of the V systems can be the same in both syllables or there may be a contrast.

**Same Grade V**

- **Disyllabic:** \(\alpha C-C\alpha\) kaya 'rock'
- \(\iota C-C\iota\) tipi 'blizzard'

- **Trisyllabic:** \(\alpha C-C\alpha-C\alpha\) kösele 'leather'
- \(\iota C-C\iota-C\iota\) uskumru 'mackarel'

**Contrasting Grade V**

- **Disyllabic:** \(\alpha C-C\iota\) koru 'protect'
- \(\iota C-C\alpha\) şişe 'bottle'

- **Trisyllabic:** \(\alpha C-C\iota-C\alpha\) kelime 'word'
- \(\iota C-C\alpha-C\alpha\) iskemle 'chair'

**4.1.2.1. Prosodies of the Root in relation to V Systems**

\(y/w\) and \(r\) prosodies operate with \(\alpha\) and \(\iota\) in all syllables of the root. \(r\) prosody operates with \(\iota\) in all syllables of the root, but with \(\alpha\) only in the first syllable. Polysyllabic roots are thus \(y\) or \(w\) prosodic regardless of V systems, e.g.

- \(y\alpha C-C\iota\) keçi 'goat'
- \(y\iota-C\alpha C\) inek 'cow'
- \(w\alpha C-C\iota\) kati 'hard'
- \(y\iota-C\iota C\) ilik 'marrow'

---

Roots are also r prosodic regardless of V system, e.g.

\[^rC\alpha-CaC\] saman 'hay'
\[^rC\alpha-C\alphaC\] fitil 'wick'
\[^rCa-C\alphaC\] takım 'team'
\[^rCa-C\alphaC\] kireq 'lime'

But they are r prosodic only with i V systems, i.e., \(\text{\textit{i}}\) e.g.

\[^rC\alpha-C\alpha\] kuru 'dry'
\[^r\alpha-C\alphaC-C\alpha\] uskumru 'mackarel'

or \(\alpha-i\), e.g.

\[^rCa-C\alpha\] koru 'protect'
\[^rCa-C\alphaC-C\alphaC\] tomurcuk 'bud'

If the first syllable is r prosodic with \(\alpha\) or \(\text{\textit{i}}\), and the following syllable has \(\alpha\), then the syllable with \(\alpha\) is r prosodic, e.g.

\[^rCa-C\alphaC\] köpek 'dog'
\[^rC\alpha-C\alphaC\] güneş 'sun'

It is also possible to have an r prosodic syllable with \(\text{\textit{i}}\) following a r prosodic syllable with \(\alpha\) when the syllable with \(\text{\textit{i}}\) has a bilabial exponent for the initial C system\(^1\), e.g.

\[^rC\alpha-C\alphaC\] kabuk 'shell'
\[^rCa-C\alphaC\] havuz 'pool'

r/r prosodic roots can be y or w prosodic, i.e. r/r prosodies of the root do not impose any restrictions on the y/w prosodic character of the root.

\(^1\) See N. Waterson, op. cit., p. 580.
For a different prosodic relation of syllables see unassimilated-
loan roots, pp. 34–85.

Prosodies and V systems to cover noun, adjective and verb
roots have been described in the sections above, and only C systems
have now to be shown. These are dealt with separately under the
headings of noun roots, adjective roots and verb roots.

As the structures possible for all the roots would be too
numerous to analyse here, only a sample of structures into which
the majority of each class of roots fall are given.

4.2. The Noun

In this analysis noun roots are considered in two groups:
   i. native and assimilated-loan noun roots
   ii. unassimilated-loan noun roots

4.2.1. Native and Assimilated-Loan Noun Roots

4.2.1.1. Syllabic Structure

Native and assimilated-loan noun roots can be monosyllabic,
disyllabic or trisyllabic. Nouns of monosyllabic root structure
are limited in number compared to disyllabic and trisyllabic nouns.
The possible structures for these are as follows:\(^1\):

\(^1\) One example is given for each type of structure.
The commonest of these four structures is CVC.

In disyllabic noun roots the most frequent sequences of syllables are as follows:

| VC - CVC | oluk | 'drain pipe' |
| CVC - CVC | erkek | 'male' |
| VC - CV | abla | 'sister' |
| CV - CV | baba | 'father' |
| CVC - CV | tarla | 'farming land' |
| CV - CVC | çocuk | 'child' |
| CVC - CVC | hendek | 'ditch' |

In trisyllabic noun roots the more common syllable sequences are as follows:

| CV - CV - CV | kelim | 'word' |
| CV - CV - CVC | bilezik | 'bracelet' |
| CV - CVC - CVC | mühendis | 'engineer' |
| CVC - CV - CVC | memleket | 'country' |
| VC - CV - CV | iskele | 'pier' |
| VC - CVC - CV | is kemle | 'chair' |

The above structures show that noun roots can be C or V final, and C or V initial. The root final is of extreme significance when suffixed forms are considered. The juncture of root + suffix exhibits similar sets of features with V final roots, and other sets with C final roots. To simplify the
presentation of analysis and to avoid repetition two noun root structures, one monosyllabic and the other disyllabic, viz. CVC and CV-CVC, are described; although CVCC noun roots are limited in number, this structure is also included in the description to show the restriction of the subsystems that can be set up for the C systems in the final cluster.

Systems are set up here only for the root initials and root finals as statements have to be made in relation to these systems when intra-word and inter-word junctures are analysed. There is no apparent restriction on what C finals are possible with particular C initials, so consonant combinations are not described.

4.2.1.2. C Systems

4.2.1.2.1. CVC Structure

The following subsystems can be set up for the initial C system in CVC structure.

i. P subsystem: There are four terms in this subsystem, $P_4$, the terms being $p$, $t$, $k$, $q$. The phonetic exponents, which are all stops, are consonants of $P$, $T$, $K$ and $Q$ groups in h prosodic onsets, and consonants of $B$, $D$, $G$ and $C$ groups in h prosodic onsets.

Examples:

$$\begin{align*}
\text{h}_P \quad \text{pay} & \quad \text{'share'} \\
\text{h}_P \quad \text{bez} & \quad \text{'cloth'}
\end{align*}$$

1. See Chapters 6 and 8.
2. For grouping of consonants see 2.7.
3. Onset refers to root onset which coincides with syllable onset.
ii. S subsystem: There are two terms in this subsystem, $S_2$, the terms being $s$ and $q$. There is no contrast of $h/h$ prosodies when the term is $q$, which operates in $h$ prosodic onsets only. The term $s$ can operate in $h/h$ prosodic onsets. In $h$ prosodic onsets the exponents, which are sibilants, are consonants of the $S$ and $Q$ groups, and in $h$ prosodic onsets they are the consonants of the $Z$ group.

Examples:

$h_{PVC}^q$ toz 'dust'

$h_{PVC}^q$ dal 'branch'

$h_{PVC}^q$ kir 'dirt'

$h_{PVC}^q$ gul 'rose'

$h_{PVC}^q$ col 'desert'

$h_{PVC}^q$ can 'life'  

iii. N subsystem: There are two terms in this subsystem, $N_2$, the terms being $m$ and $n$. There is no contrast of $h/h$ prosodies, the terms operate in $h$ prosodic onsets only. The exponents, which are nasals, are consonants of the $M$ and $N$ groups.

Examples:

$h_{SVC}^q$ sis 'skewer'

$h_{SVC}^q$ soz 'speech'

$h_{SVC}^q$ zil 'bell'

1 Only $h/h$ prosodies are marked in the examples to show the terms operating in different types of onsets and endings. $y/w$, $r/r$ are not shown as there are no restrictions on their occurrences.
iv. K subsystem: There are five terms in this subsystem, $K_5$, the terms being f, h, l, r, y. The term f operates in $h/h$ prosodic onsets, the exponents in $h$ onsets are consonants of the F group, and in $h$ onsets consonants of the V group. The term h operates in $h$ prosodic onsets only, and the exponents are consonants of the H group. l, r, y operate in $h$ prosodic onsets, and their exponents are consonants of the L, R, Y groups. All the exponents of the K subsystem are continuants.

Examples:

- $h_{NVC}$ in mal 'property'
- $h_{NVC}$ in nem 'humidity'

The initial C in $y/w$, $r/r$ prosodic CVC noun root structure can now be represented as follows:

- $h_{B_C V_C}$
- $h_{B_C V_C}$
The following subsystems are set up for the final C of the CVC structure.

i. P subsystem: There are four terms in this subsystem, \( P \), the terms being p, t, k, ç which operate in \( h/h \) prosodic endings.

In syllables with \( h \) prosodic endings the exponents are consonants of the P, T, K, Ç groups. In syllables with \( h \) prosodic endings exponents are consonants of the P, T, K, Ç groups when a consonant or nothing follows, but consonants of B, D, G and C groups or a palatal glide in a y prosodic root, and a velar glide in a w prosodic root when a vowel follows.

Examples:

\[
\begin{align*}
\text{CVP}^h_p & \quad \text{sap} \quad \text{'stem'} \\
\text{CVP}^h_p & \quad \text{dip} \quad \text{'bottom'} \\
\text{CVP}^h_t & \quad \text{süt} \quad \text{'milk'} \\
\text{CVP}^h_t & \quad \text{tat} \quad \text{'taste'} \\
\text{CVP}^h_k & \quad \text{kök} \quad \text{'root'} \\
\text{CVP}^h_k & \quad \text{gök} \quad \text{'sky'} \\
\text{CVP}^h_g & \quad \text{saç} \quad \text{'hair'} \\
\text{CVP}^h_g & \quad \text{taç} \quad \text{'crown'} 
\end{align*}
\]

---

1. \( h/h \) does not necessarily imply that each of the terms can operate in \( h \) and \( h \) onsets (or endings, as the case may be); it is a generalized statement for terms in a specific subsystem.

2. Ending refers to root ending which coincides with syllable ending.


4. For instrumental evidence that there is no difference in the \( P \) in absolute final position in \( h/h \) endings see Specs.8 and 10, pp.194 and 195.
ii. $S$ subsystem: There are two terms in this subsystem, $S$, the terms being $\xi$ and $s$. There is no contrast of $h/h$ prosodies when the term is $\xi$, which operates only in $h$ prosodic endings. The exponents are consonants of the $S$ group. The term $s$ operates in $h/h$ prosodic endings; in $h$ endings the exponents are consonants of the $S$ group, and in $h$ endings the exponents are consonants of the $Z$ group.

Examples:

\[
\begin{align*}
CVS^h_\xi & \quad \text{ka} \& \quad \text{'eye-brow'} \\
CVS^h_s & \quad \text{tas} \quad \text{'dish'} \\
CVS^h_\xi & \quad \text{saz} \quad \text{'string instrument'}
\end{align*}
\]

iii. $N$ subsystem: There are two terms in this subsystem, $N$, the terms being $m$ and $n$. There is no contrast of $h/h$ prosodies, the terms operate in $h$ prosodic endings only. The exponents are consonants of the $M$ and $N$ groups.

Examples:

\[
\begin{align*}
CVN^h_m & \quad \text{dam} \quad \text{'roof'} \\
CVN^h_n & \quad \text{kan} \quad \text{'blood'}
\end{align*}
\]

iv. $K$ subsystem: There are six terms in this subsystem, $K$, the terms being $f, l, r, y$ and $g$. There is no contrast of $h/h$ prosodies when the terms are $l, r, y, g$ which operate in $h$ prosodic endings only; the exponents for $l, r, y$ are consonants of the $L, R, Y$ groups, and for $g$ vowel length when a consonant or

---

1 There is a certain degree of devoicing in the consonants of $M, N$ groups when they are exponents of the final $N$ subsystems. They are analysed as functioning in $h$ prosodic syllable ending because of the way they link with suffixes. See Spec. 4, p. 192.

2 See footnote 1 above which also applies to consonants of the $L, R, Y$ groups when they are exponents of the final $K$ subsystem for which see Specs. 5, 6, 7, pp. 193 and 194.
nothing follows or a velar/palatal glide when a vowel follows.  
The term h operates in h endings only and the exponents are  
consonants of the H group.  The term f can operate in h/h endings,  
the exponents in h endings are consonants of the F group, and in  
h endings consonants of the V group.  The word su is treated as  
having CVC structure with K for final C, i.e. CVR^h, because of the  
way it links with suffixes, the term y has no exponents in absolute  
final and pre consonantal position, and the exponent [ j ] in  
pre vocalic position.

Examples:  

\[
\begin{align*}
\text{CVK}^h_1 & \quad \text{pul} \quad \text{'stamp'} \\
\text{CVK}^h_2 & \quad \text{kir} \quad \text{'dirt'} \\
\text{CVK}^h_3 & \quad \text{yay} \quad \text{'bow'} \\
\text{CVK}^h_4 & \quad \text{bag} \quad \text{'vineyard'} \\
\text{CVK}^h_5 & \quad \text{dev} \quad \text{'monster'} \\
\text{CVK}^h_6 & \quad \text{kuf} \quad \text{'mould'} \\
\text{CVK}^h_7 & \quad \text{mih} \quad \text{'nail'}
\end{align*}
\]

The final C in y/w, r/r prosodic CVC noun root structure can now  
be represented as follows:

\[
\begin{align*}
\text{CVC}^h_{h/h} & \\
\text{CVC}^h_{s/h} & \\
\text{CVC}^h_{v/h} & \\
\text{CVC}^h_{k/h} & \\
\text{CVC}^H_{n/h} & \\
\text{CVC}^H_{k/h} &
\end{align*}
\]

\[1 \text{ See N. Waterson, op. cit., p.582, footnote 4.} \]
\[2 \text{ ibid. p.585, footnote 1.} \]
\[3 \text{ See p. 73 , footnote 1.} \]
A comparison of initial and final subsystems shows that they have the same number of terms which are phonetically similar in P, S and N subsystems and which function similarly in h/h onsets and endings. The number of terms in K subsystem is five for initial, and six for final K.

Initial and final K subsystems have 5 terms, l, r, y, f, with similar exponents, and final K subsystem has ə as the sixth term.

4.2.1.2.1. CV—CVC Structure

The subsystems which have been set up for the initial C of the CVC structure are applicable to the initial C of the CV—CVC structure, and therefore, to avoid repetition, only subsystems for the final C of CV—CVC structure which differ from those of final C of CVC structure are given below:

i. P subsystem: There are four terms in this subsystem, P₄; of the four terms, p, k, ə operate in h prosodic endings only, and the exponents are consonants of P, K, ə groups when a consonant or nothing follows, but when a vowel follows, the exponents are consonants of the B, C groups for p, ə, and a palatal glide in y prosodic words, and a velar glide in w prosodic words for k.

The term t operates in h/h endings, the exponents are consonants of the T group in h prosodic endings and also in h endings when a consonant or nothing follows, and consonants of the D group in h endings when a vowel follows.

Examples:

CV—CVP₄ᵖ ᵃrɑp 'wine'
CV—CVP₄ᵗ ᵁsepet 'basket'
CV—CVP₄ᵗ ᵃياة 'passway'
CV - CVP^h_k  kepek  'dandruff'
CV - CVP^h_Ç  piliq  'chicken'

ii. \( S \) subsystem: There are two terms in this subsystem, \( S_2 \), the terms being \( q \) and \( s \). There is no contrast of \( h/\overline{h} \) prosodies when the term is \( q \) which operates only in \( h \) prosodic endings. The exponents are consonants of the \( S \) group. The term \( s \) operates in \( h/\overline{h} \) prosodic endings. The exponents in \( h \) endings are consonants of the \( S \) group, and in \( \overline{h} \) endings consonants of the \( Z \) group.
Examples:

CV - CVS^h_q  baris  'peace'
CV - CVS^h_s  seyis  'groom'
CV - CVS^h_s  topuz  'knob'

iii. \( N \) subsystem: There are two terms in this subsystem, \( N_2 \), the terms being \( m \) and \( n \) which operate only in \( h \) prosodic endings. The exponents are consonants of the \( M \) and \( N \) groups.
Examples:

CV - CVN^h_m  resim  'picture'
CV - CVN^h_n  keter  'linen'

iv. \( K \) subsystem: There are four terms in this subsystem, \( K_4 \), the terms being \( f \), \( l \), \( r \), \( y \). There is no contrast of \( h/\overline{h} \) prosodies when the terms are \( l \), \( r \), \( y \) which operate in \( h \) prosodic endings only. The exponents are consonants of the \( L \), \( R \), \( Y \) groups. The term \( f \) can occur in \( h/\overline{h} \) prosodic endings. The exponents in \( h \) prosodic endings are consonants of the \( F \) group, and in \( \overline{h} \) endings consonants of the \( V \) group.\(^1\)

\(^1\) The term \( f \) occurs in only a few \( h \) prosodic ending words, mostly neologisms such as görev 'duty'.
Examples:

CV - CVK^1_l hedef 'aim'
CV - CVK^2_l görev 'duty'
CV - CVK^3_l temel 'foundation'
CV - CVK^4_l kömür 'coal'
CV - CVK^5_l saray 'palace'

The final C in γ/ω, r/r prosodic CV - CVC noun root structure can now be represented as follows:

CV - CVC^h/γ
CV - CVC^h/β
CV - CVC^h/ν
CV - CVC^h/κ

A comparison of final subsystems in CVC and CV - CVC shows that S and N subsystems have the same number of terms which are phonetically similar and function in similar types of ending. K subsystem for final C in CVC has six terms compared to four of the K subsystem for final C in CV - CVC. Apart from this, the terms function in similar type of endings and have similar exponents in both structures. The main difference is in P subsystems: although the number of terms are the same and the terms similar, in CVC structure they operate in h/γ prosodic endings, whereas in CV - CVC structure p, k, c operate in h prosodic endings only, and t operates in h/γ endings.
4.2.1.2.3. CVCC Structure

The following subsystems are set up for the initial C system in CVCC structure.

i. P subsystem: There are four terms in this subsystem, $P_4$, the terms being $p$, $t$, $k$, $q$ which operate in $h/h$ prosodic onsets. The exponents are consonants of the $P$, $T$, $K$, $Q$ groups in $h$ prosodic onsets, and consonants of the $B$, $D$, $G$, $C$ groups in $h$ prosodic onsets.

Examples:

- $hP_{aCC}^p$ post 'animal skin'
- $hP_{aCC}^p$ borq 'debt'
- $hP_{bCC}^t$ turp 'radish'
- $hP_{aCC}^t$ dert 'sorrow'
- $hP_{cCC}^k$ kurt 'wolf'
- $hP_{aCC}^k$ genç 'youth'
- $hP_{dCC}^q$ çark 'wheel'
- $hP_{aCC}^q$ cilt 'complexion'

ii. S subsystem: There are two terms in this subsystem, $S_2$, the terms being $q$ and $s$. $q$ operates in $h$ prosodic onsets only, and the exponents are consonants of the $Q$ group. $s$ operates in $h/h$ prosodic onsets; the exponents in $h$ onsets are consonants of the $S$ group, and in $h$ onsets, consonants of the $Z$ group.
Examples:

\[ h_{S,CC} \] šart 'condition'

\[ h_{S,CC} \] sirk 'circus'

\[ h_{S,CC} \] zamk 'glue'

iii. N subsystem: This has one term, \( m \), which operates in \( h \) prosodic onset, and the exponent is a consonant of the M group.

Example:

\[ h_{N,CC} \] mülk 'property'

iv. K subsystem: There are four terms in this subsysytem, \( K_4 \), the terms being \( f \), \( h \), \( r \), \( y \). \( f \) and \( h \) operate in \( h \) prosodic onsets, and the exponents are consonants of the F and H groups. \( r \) and \( y \) operate in \( h \) prosodic onsets, and the exponents are consonants of the R and Y groups.

Examples:

\[ h_{K,CC} \] fark 'difference'

\[ h_{K,CC} \] halk 'people'

\[ h_{K,CC} \] renk 'colour'

\[ h_{K,CC} \] yurt 'country'

The initial C system in CVCC noun root can now be represented as follows:

\[ h_{C,VCC} \] 

\[ h_{C,VCC} \] 

\[ h_{C,VCC} \] 

\[ h_{C,VCC} \] 

\[ h_{C,VCC} \]
In CVCC the ending can be h/h prosodic. Three subsystems are set up for the first C of the final cluster, and these are as follows:

i. S subsystem: There are two terms in this subsystem, § and s, and the exponents are consonants of the S and § groups.

ii. N subsystem: There are two terms in this subsystem, m and n, the exponents being consonants of the M and N groups.

iii. K subsystem: There are four terms in this subsystem, K₄, which are f, h, l, r, the exponents being the consonants of the F, H, L and R groups. For examples showing these subsystems see below.

Two subsystems, P and S, are set up for the final C system.

i. P subsystem has four terms, p, t, k, ç. The term p operates in h prosodic endings only, and the exponents are consonants of the P group. ç operates in h prosodic endings only, and the exponents are consonants of the ç group when a consonant or nothing follows, and consonants of the C group when a vowel follows. The terms t and k operate in h/h endings; in h prosodic endings the exponents are consonants of the T and K groups, and in h prosodic endings, consonants of the T and K groups when a consonant or nothing follows, and consonants of the D and G groups when a vowel follows.

Examples:

CVKP₄ᵖʰₚ kulp 'handle'

CVKR₄ᵗʰₜ zift 'tar'
CVSP_{sk}^{h} \quad \text{köşk} \quad \text{'mansion'}

CVKP_{st}^{h} \quad \text{dert} \quad \text{'sorrow'}

CVSP_{st}^{h} \quad \text{post} \quad \text{'animal skin'}

CVKP_{pc}^{h} \quad \text{burç} \quad \text{'sign of the zodiac'}

CVNP_{mk}^{h} \quad \text{denk} \quad \text{'bundle'}

CVNP_{mk}^{h} \quad \text{zamk} \quad \text{'glue'}

ii. S subsystem: This has one term, s, which operates in h prosodic endings, and the exponents are consonants of the S group.

Examples:

CVKS_{ps}^{h} \quad \text{ders} \quad \text{'lesson'}

CVNS_{ns}^{h} \quad \text{sans} \quad \text{'luck'}

The possible combinations of - CC can be summarized thus:

a) - SP when the terms are: - S \_ P_{tk}
   \quad - S \_ P_{sk}

b) - NP when the terms are: - N \_ P_{mk}
   \quad - N \_ P_{m,k,ç}

c) - KP when the terms are: - K \_ P_{t,k}
   \quad - K \_ P_{t,k,p}
   \quad - K \_ P_{t,k,ç}

d) - NS when the terms are: - N \_ S_{ns}

Nouns which have been treated as having the structure CVCeC are not analysed separately here\(^1\), as the tendency in colloquial speech now is to fit them into the pattern of CVCVC structure which is already described above, 4.2.1.2.

---

\(^1\) See N. Waterson, op. cit., p. 586.
4.2.2. Unassimilated-loan Noun Roots

4.2.2.1. Syllabic Structure

Unassimilated-loan noun roots can be considered in two groups.

i. Those which are considered unassimilated by virtue of their phonetic form, i.e. they have the same syllabic structures as the native and assimilated-loan nouns, but have some phonetic features which require them to be classed as unassimilated.

ii. Those which have syllabic structures of a type not found in native and assimilated roots.

Phonetic features which cause words exhibiting them to be regarded as unassimilated have already been discussed in Chapter 3, where various unassimilated-loan noun roots of the first group are given as examples, so no further discussion is needed. It is, therefore, roots of the second group which are analysed here.

Examples of such syllabic structures are as follows (one example is given for each):

- CCVC  tren  'train'
- CV-VC  saat  'hour'
- CV-V-CVC  saadet  'happiness'
- CV-CV-VC  ziraat  'agriculture'
- VC-CVCC  artist  'film star'
- VCC-CCVC  ekspres  'express'
- CV-CV-CV-VC  münacaat  'application'
- CV-CV-CV-CV  münakaşə  'argument'
- CVC-CV-V  mecmua  'magazine'
- VC-CV-V  iddia  'claim'
It is especially interesting to note the possibility of $V-V$ syllable division, i.e. a sequence of $V$ final and $V$ initial syllables which is not possible in native or assimilated-loan noun roots.

4.2.2.2. Prosodies

In addition to $y/w$, $r/r$ and $h/h$ prosodies which have already been described, a prosody of length, symbolized by $L$, is set up for certain unassimilated-loan noun roots. The exponent of $L$ prosody is vowel length, i.e. a long vowel, e.g.

$L_{\text{Ca}}-L_{\text{Ca}}$ [da:va:] dava 'lawsuit'

and the juncture of syllables marked with $L$ prosody and suffixes are as for $-V$ final syllables, e.g.

$L_{\text{Ca}}-L_{\text{Ca}} + CV$ [da:va:sw] dava$`$ his law suit

4.2.2.2.1 Prosodies of the Unassimilated-loan Root in Relation to $V$ Systems

$y/w$ prosodies do not necessarily operate throughout the whole root in unassimilated loans, they can be $y$ prosodic onset $w$ prosodic ending and vice versa, e.g.

$\overline{\text{V}}CV-\overline{\text{V}}CV-VC$ ziraat 'agriculture'

$\overline{\text{W}}VC-\overline{\text{V}}CVCC$ artist 'film star'

$\overline{\text{W}}CVCY$ gol 'goal'

$\overline{\text{V}}CVCW$ lâf 'speech'

1 Cf. native and assimilated-loan noun roots which, at the phonetic level, end in a long vowel, but in phonology, treated as being C final because of the type of junction they have with suffixes, see pp. 74-75, K subsystem.

2 Cf. native and assimilated-loan noun roots, p. 64.
r prosody does not always operate with \( r \) in all syllables of the root, e.g.

\[ r_C \rightarrow r_C C \quad \text{mümin} \quad \text{'one who believes'} \]

\[ r_C \rightarrow r_C C \quad \text{sinus} \quad \text{'sinus'} \]

and with \( a \), it can operate in any of the syllables, not just the first syllable, e.g.

\[ r_C \rightarrow r_C a \quad \text{kilo} \quad \text{'kilogramme'} \]

\[ r_C a C \rightarrow r_C a C \quad \text{konsol} \quad \text{'chest of drawers'} \]

\[ r_C \rightarrow r_C a - r_C a \quad \text{bilardo} \quad \text{'billiards'} \]

### 4.2.2.3. C Systems

A striking feature of C systems in unassimilated-loan roots is the possibility of the term \( s \) of subsystem \( S \) functioning in \( h \) prosodic onsets/ending, e.g. \( w^{\text{h SVC} - \text{VC}} \quad \text{jarse} \quad \text{'jersey'} \), and also the possibility of \( r_C \) functioning in \( h \) prosodic endings, e.g. \( V^{h} e^{h} r^{h} V - V \quad \text{iddia} \quad \text{'claim'} \).

The CCVC structure is the most alien to the native structure, and it is therefore analysed below showing what systems can operate in an initial cluster and what possible final systems are. The C systems in other structures are mostly the same as those given for native and assimilated-loan noun roots, with the exception of features mentioned above, and are therefore not described.

#### 4.2.2.3.1. CCVC Structures

The following subsystems are set up for the initial C in CCVC structure:

- **P subsystem:** There are three terms in this subsystem, \( P \), the terms being \( p, t, k \) which operate in \( h/h \) prosodic onsets. The
exponents are consonants of the P, T, K groups when the onset is $h$ prosodic, and B, D, G groups when the onset is $h$ prosodic.

Examples:

\[
\begin{align*}
&P_{PCVC} \quad \text{priz} \quad 'socket' \\
&P_{PCVC} \quad \text{blok} \quad 'block' \\
&T_{PCVC} \quad \text{tren} \quad 'train' \\
&T_{PCVC} \quad \text{dram} \quad 'drama' \\
&K_{PCVC} \quad \text{kral} \quad 'king' \\
&K_{PCVC} \quad \text{grev} \quad 'strike' \\
\end{align*}
\]

ii. $S$ subsystem: There is one term in this subsystem, $S_1$, the term being $s$ which operates in $h$ prosodic onsets only. The exponents are consonants of the $S$ group.

Examples:

\[
\begin{align*}
&S_{SCVC} \quad \text{stil} \quad 'style' \\
&S_{SCVC} \quad \text{spor} \quad 'sport' \\
\end{align*}
\]

iii. $K$ subsystem: There is one term in this subsystem, $K_1$, the term being $f$ which operates in $h$ prosodic onsets only. The exponents are consonants of the $F$ group.

Examples:

\[
\begin{align*}
&F_{KCVC} \quad \text{fren} \quad 'brake' \\
&F_{KCVC} \quad \text{flüt} \quad 'flute' \\
\end{align*}
\]
The following subsystems are set up for the second C of the CCVC structure.

i. P subsystem: There are two terms in this subsystem, $P_2$, the terms being $p$ and $t$, and the exponents are consonants of the $P$ and $T$ groups.

Examples:

\[
\begin{align*}
&\text{CPVC} \quad \text{spor} \quad '\text{sport}' \\
&\text{CPVC} \quad \text{step} \quad '\text{steppe}'
\end{align*}
\]

ii. K subsystem: There are two terms in this subsystem, $K_2$, the terms being $l$ and $r$. The exponents are consonants of the $L$ and $R$ groups.

Examples:

\[
\begin{align*}
&\text{CKVC} \quad \text{bluz} \quad '\text{blouse}' \\
&\text{CKVC} \quad \text{kres} \quad '\text{nursery school}'
\end{align*}
\]

The possible combinations of $C_C$ can now be summarized as:

a) $SP$ — when the terms are : $S_{P,T}$

b) $PK$ — when the terms are : $P_{P,R,L}$

\[
\begin{align*}
&P_{P,R,L} \\
&P_{L} \\
&P_{K}
\end{align*}
\]

c) $KK$ — when the terms are : $K_{P,R,L}$

The analysis shows that the initial C system is restricted in CCVC structure, especially when compared to the initial C system in CVC structure. The $P$ subsystem has three terms in CCVC
structure as compared to four terms in CVC. S subsystem has one term in CCVC operating in h prosodic onset, but two in CVC operating in h/h prosodic onset. No N subsystem can be set up for the initial C in CCVC structure. K subsystem has one term in CVCC operating in h prosodic onset, but two in CVC operating in h/h prosodic onset, and the fifth, f, in h/h prosodic onset.

The subsystems for final C of the CCVC structure are given below. It will be seen that there are some differences from the subsystems set up for final C of native Turkish and assimilated loan noun roots.

i. P subsystem: There are four terms in this subsystem, $P_4$, the terms being p, t, k, ç. The terms t and ç operate in h prosodic endings and the exponents are consonants of the T and Ç groups. p operates in h prosodic endings, and the exponents are consonants of the P group when a consonant or nothing follows, and the B group when a vowel follows. k operates in h/h prosodic endings the phonetic exponents being consonants of the K group in h endings, and also in h endings when a consonant or nothing follows, but a velar glide when a vowel follows in h prosodic endings.

Examples:

- $CCV_P^h\, p\, grip$ 'a heavy cold'
- $CCV_t^h\, brüt$ 'gross'
- $CCV_ç^h\, briç$ 'bridge (card game)'
- $CCV_k^h\, blok$ 'block'
- $CCV_k^h\, plâk$ 'record'
ii. $S$ subsystem: There are two terms in this subsystem, $S_2$, the terms being $s$ and $s$. Both terms can operate in h/h prosodic endings; in h endings the exponents are consonants of the $S$ and $S$ groups, and in h endings, consonants of the $Z$ group and [3].

Examples:

- $CCVS^h_s$ pres 'pressing machine'
- $CCVS^h_s$ kriz 'crisis'
- $CCVS^h_s$ broq 'brooch'
- $CCVS^h_s$ plaj 'beach'

iii. $N$ subsystem: There are two terms in this subsystem, $N_2$, the terms being $n$, $n$ which operate in h prosodic endings only, and the exponents are consonants of the $N$ and $N$ groups.

Examples:

- $CCVN^h_n$ gram 'gramme'
- $CCVN^h_n$ tren 'train'

iv. $K$ subsystem: There are two terms in this subsystem, $K_2$, the terms being $f$ and $r$. $f$ operates in h/h prosodic endings; the exponents are consonants of the $F$ group in h prosodic ending, and the $V$ group in h ending. $r$ operates in h endings and the exponents are consonants of the $R$ group.

Examples:

- $CCVK^h_f$ blöf 'bluff'
- $CCVK^h_f$ grev 'strike'
- $CCVK^h_f$ spor 'sport'
The final C in ŋ/ŋ', r/r prosodic CCVC noun root structure can now be represented as follows:

\[
\begin{align*}
&\text{CCVC}^{h/h}_{P_4} \\
&\text{CCVC}^{h/h}_{S_2} \\
&\text{CCVC}^{h}_{N_2} \\
&\text{CCVC}^{h/h}_{K_2}
\end{align*}
\]

4.3. The Adjective

Like noun roots, adjective roots are also considered in two groups:

i. native and assimilated-loan adjective roots

ii. unassimilated-loan adjective roots

4.3.1. Native and Assimilated-loan Adjective Roots

4.3.1.1. Syllabic Structure

The majority of the native and assimilated-loan adjective roots are monosyllabic and disyllabic, with a limited number of trisyllabic roots.¹

Monosyllabic adjective roots can be of the following structure:

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC ak</td>
<td>'white'</td>
<td></td>
</tr>
<tr>
<td>VCC ilk</td>
<td>'first'</td>
<td></td>
</tr>
<tr>
<td>CVC mor</td>
<td>'purple'</td>
<td></td>
</tr>
<tr>
<td>CVCC dinç</td>
<td>'fit'</td>
<td></td>
</tr>
</tbody>
</table>

¹ There are trisyllabic adjectives like yumuşak 'soft' kirmizi 'red' which are frequently used, but as they are fewer than monosyllabic and disyllabic adjectives, and there is nothing new to be stated about the C and V systems and prosodies, their structures will not be described. Quite a number of trisyllabic adjectives are also found in slang usage, e.g. dangalak 'stupid', hovarda 'generous'.
Disyllabic adjective roots have mainly the following structures:

- **V-CVC**
  - uzun  'long'
- **CV-CVC**
  - büyük 'big'
- **CVC-CVC**
  - çiplak 'naked'
- **CVC-CV**
  - yassi 'flat'
- **CV-CV**
  - yeni 'new'
- **V-CV**
  - aci 'bitter'
- **VC-CV**
  - ekşi 'sour'

These structures show that though monosyllabic adjective roots are only C final, disyllabic ones can be C or V final. As for the root initials, these can be C or V in monosyllabic and disyllabic adjectives.

A description of all structures is not given because this would mean a lot of repetition as no new statements need to be made for C and V systems. Therefore only adjective roots of the same types of structure as the noun roots which have already been analysed, i.e. CVC, CV-CVC and CVCC are described in order to enable a comparison of the initial and final C systems in noun and adjective root structures to be made.

### 4.3.1.2. C Systems

#### 4.3.1.2.1. CVC Structure

The following subsystems can be set up for the initial C system in CVC structure:

- **P subsystem**: There are four terms in this subsystem, $P_4$, the terms being $p$, $t$, $k$, $ç$. $p$, $t$, $k$ operate in $h/h$ prosodic onsets and the exponents are consonants of the $P$, $T$, $K$ groups in $h$ onsets and $B$, $D$, $G$ in $h$ onsets. $ç$ operates in $h$ prosodic onset and the exponent is [ç].

Examples:

\[ \begin{align*}
\text{Unmarked} & : hP_0C \\
\text{P marked} & : hP_1C \\
\text{P marked} & : hP_2C \\
\text{P marked} & : hP_3C \\
\text{P marked} & : hP_4C
\end{align*} \]

\[ \begin{align*}
\text{P marked} & : pC \\
\text{P marked} & : tC \\
\text{P marked} & : kC \\
\text{P marked} & : çC
\end{align*} \]
\[ h_{PoC}^p \] boz 'off white'

\[ h_{PoC}^t \] tiz 'shrill'

\[ h_{PoC}^t \] dik 'steep'

\[ h_{PoC}^k \] kit 'scarce'

\[ h_{PoC}^C \] güç 'difficult'

\[ h_{PoC}^q \] çığ 'raw'

ii. S subsystem: There are two terms in this subsystem, \( S_2 \), the terms being \( s \) and \( s \). There is no contrast of \( h/h \) prosodies when the term is \( s \) which operates in \( h \) onsets, and the exponents are consonants of the \( S \) group. \( s \) can operate in \( h/h \) onsets and the exponents are consonants of the \( S \) group in \( h \) onsets, and the \( Z \) group in \( h \) onsets.

Examples:

\[ h_{S2C}^s \] şis 'swollen'

\[ h_{S2C}^C \] saf 'stupid'

\[ h_{S2C}^s \] zor 'difficult'

iii. N subsystem: There is one term in this system, \( N_1 \), the term being \( m \) which operates in \( h \) prosodic onset and the exponent is a consonant of the \( M \) group.

Examples:

\[ h_{NaC}^m \] mor 'purple'
iv. K subsystem: There are two terms in this subsystem, \( K^2 \), the terms being \( h \) and \( y \). \( h \) operates in \( h \) onsets, and the exponents are consonants of the \( H \) group. \( y \) operates in \( h \) prosodic onsets, and the exponents are consonants of the \( Y \) group.

Examples:

\[
\begin{align*}
\text{h}_K^1 C & \quad \text{hür} \quad \text{'free'} \\
\text{h}_K^2 C & \quad \text{yas} \quad \text{'wet'}
\end{align*}
\]

The initial \( C \) in \( y/v, r/r \) prosodic CVC adjective root can now be represented as follows:

\[
\begin{align*}
\text{h/} & \text{h}_C \text{VC} \\
& \text{h}_4 \\
\text{h/} & \text{h}_C \text{VC} \\
& \text{h}_S_2 \\
\text{h/} & \text{h}_C \text{VC} \\
& \text{h}_N_1 \\
\text{h/} & \text{h}_C \text{VC} \\
& \text{h}_K_2
\end{align*}
\]

The following subsystems are set up for the final \( C \) of the CVC structure.

i. P subsystem: There are three terms in this subsystem, \( P_3 \), the terms being \( t, k, ç \). \( t, k \) operate in \( h \) prosodic endings only, and the exponents are consonants of the \( T \) and \( K \) groups. \( ç \) operates in \( h \) endings, the exponents being the consonants of the \( Ç \) group when a consonant or nothing follows, but consonants of the \( C \) group when a vowel follows.
Examples:

\[ C_iP^h \quad \text{kit} \quad 'scarce' \]
\[ C_iP^h_k \quad \text{dik} \quad 'steep' \]
\[ C_aP^h_\xi \quad \text{geq} \quad 'late' \]

ii. S subsystem: There are two terms in this subsystem, \( S_2 \), the terms being \( \xi \) and \( s \). There is no contrast of \( h/h \) prosodies when the term is \( \xi \) which operates in \( h \) Prosodic ending only, and the exponents are consonants of the \( S_2 \) group. \( s \) can operate in \( h/h \) prosodic endings. The exponents in \( h \) endings are consonants of the \( S \) group, and in \( h \) endings consonants of the \( Z \) group.

Examples:

\[ C_aS^h_\xi \quad \text{boq} \quad 'empty' \]
\[ C_aS^h_s \quad \text{has} \quad 'real' \]
\[ C_iS^h_s \quad \text{düz} \quad 'straight' \]

iii. N subsystem: There are two terms in this subsystem, \( N_2 \), the terms being \( m \) and \( n \) which operate in \( h \) prosodic endings, and the exponents are consonants of the \( M \) and \( N \) groups.

Examples:

\[ C_aN^h_m \quad \text{ham} \quad 'unripe' \]
\[ C_aN^h_n \quad \text{son} \quad 'last' \]

iv. K subsystem: There are five terms in this subsystem, \( K_5 \), the terms being \( f, h, r, l, g \), and \( h,f \) operate in \( h \) prosodic endings, and the exponents are consonants of the \( P \) group. \( l, r \) and \( g \) operate in \( h \) prosodic endings, the exponents being consonants of the \( R \) and \( L \)
groups and vowel length or palatal/velar glide respectively.

Examples:

\[ \text{CaK}_h^h \quad \text{su}h \quad \text{"dazzling"} \]
\[ \text{CaK}_T^h \quad \text{saf} \quad \text{"pure"} \]
\[ \text{CaK}_T^h \quad \text{zor} \quad \text{"difficult"} \]
\[ \text{CtK}_g^h \quad \text{si} \text{g} \quad \text{"shallow"} \]
\[ \text{CtK}_1^h \quad \text{du} \text{l} \quad \text{"widowed"} \]

The final C in y/w, r/r prosodic CVC adjective root can

now be represented as follows:

\[ \text{CVC}_P \]
\[ \text{CVC}_{S,2} \]
\[ \text{CVC}_{N,2} \]
\[ \text{CVC}_{K,5} \]

4.3.1.2.2. CV–CVC Structure

The following subsystems are set up for the initial C

of CV–CVC structure:

i. P subsystem: There are four terms in this subsystem, \( P_4 \), the
terms being p, t, k, q. The terms t and k operate in h/h prosodic
onsets, the exponents are consonants of the T and K groups in
h onsets, and the D and G groups in h onsets. p operates in h
prosodic onsets only, the exponents being the consonants of the
B group. q operates in h onsets, and the exponents are consonants
of the Q group.
Examples:

\[ ^h_{S'} - CVC \]

buyük  'big'

\[ ^h_{S'} - CVC \]

temiz  'clean'

\[ ^h_{S'} - CVC \]

derin  'deep'

\[ ^h_{K} - CVC \]

kücük  'small'

\[ ^h_{K} - CVC \]

güzel  'beautiful'

\[ ^h_{C'} - CVC \]

çevik  'agile'

ii. S subsystem: There are two terms in this subsystem, \( S_2 \), the terms being \( S \) and \( s \). There is no contrast of \( h/h \) prosodies when the term is \( S \) which operates in \( h \) onset only, and the exponent is \( [ \right ] \). \( S \) can operate in \( h/h \) prosodic onsets. The exponents in \( h \) onsets are consonants of the \( S \) group, and in \( h \) onsets consonants of the \( Z \) group.

Examples:

\[ ^h_{S} - CVC \]

şirin  'pretty'

\[ ^h_{S} - CVC \]

serin  'cool'

\[ ^h_{S} - CVC \]

zayıf  'weak'

iii. K subsystem: There are two terms in this subsystem, \( K_2 \), the terms being \( h \) and \( y \). \( y \) operates in \( h \) prosodic onsets, and the exponents are consonants of the \( Y \) group. \( h \) operates in \( h \) prosodic onsets, and the exponents are consonants of the \( H \) group.
Examples:

\[
\begin{align*}
_{\text{y}}^h & \text{CV} - \text{CVC} \quad \text{yavaş} \quad \text{'slow'} \\
_{\text{h}}^h & \text{CV} - \text{CVC} \quad \text{haram} \quad \text{'forbidden'}
\end{align*}
\]

The initial C systems of the y/w, r/r prosodic \textit{CV—CVC} adjective root structure can now be represented as follows:

\[
\begin{align*}
_{\text{h}}^h & \text{CV} - \text{CVC}  \\
_{\text{h}}^h & \text{CV} - \text{CVC}  \\
_{\text{h}}^h & \text{CV} - \text{CVC}
\end{align*}
\]

The following subsystems can be set up for the final C of the \textit{CV—CVC} structure.

i. \textit{P} subsystem: There are three terms in this subsystem, \textit{P}_{3}, the terms being \textit{t}, \textit{k}, \textit{q}. \textit{t} operates in \textit{h} prosodic ending only, and the exponent is [t]. The terms \textit{k} and \textit{q} operate in \textit{h} endings, and the exponents are consonants of the \textit{K} and \textit{Q} groups when a consonant or nothing follows, and consonants of the \textit{C} group or a palatal/velar glide when a vowel follows.

Examples:

\[
\begin{align*}
\text{CV—CVF}_{\text{t}}^h & \quad \text{bayat} \quad \text{'stale'}  \\
\text{CV—CVF}_{\text{k}}^h & \quad \text{küçük} \quad \text{'small'}  \\
\text{CV—CVF}_{\text{q}}^h & \quad \text{kiraq} \quad \text{'unfit for cultivation'}
\end{align*}
\]

ii. \textit{S} subsystem: There are two terms in this subsystem, \textit{S}_{2}, the terms being \textit{q} and \textit{s}. \textit{q} operates in \textit{h} prosodic endings, and the
exponents are consonants of the S group. s operates in h prosodic endings, and the exponents are consonants of the Z group.

Examples:

CV – CV$^{s}_{z}$ genis 'wide'

CV – CV$^{h}_{z}$ temiz 'clean'

iii. N subsystem: There are two terms in this subsystem, N$_2$, the terms being m and n which operate in h prosodic endings, and the exponents are consonants of the M and N groups.

Examples:

CV – CV$^{h}_{m}$ haram 'forbidden'

CV – CV$^{h}_{n}$ derin 'deep'

iv. K subsystem: There are three terms in this subsystem, K$_3$, the terms being f, l, r. f operates in h endings only, and the exponents are consonants of the F group. The terms l and r operate in h prosodic endings, and the exponents are consonants of the L and R groups.

Examples:

CV – CV$^{h}_{l}$ zayıf 'weak'

CV – CV$^{l}_{l}$ güzel 'beautiful'

CV – CV$^{h}_{r}$ bodur 'short'

The final C system in y/w, r/r prosodic CV – CVC adjective root structure can now be represented as follows:

CV – CV$^{h/h}_{p}$

CV – CV$^{h/h}_{s}$
4.3.1.2.3. CVCC Structure

The following subsystems are set up for the initial C system in CVCC adjective root structure.

i. P subsystem: There are three terms in this subsystem, \( P_3 \), the terms being \( t, k, ç \). \( k \) operates in \( h/h \) prosodic onsets, the exponents are consonants of the \( K \) and \( G \) groups in \( h \) and \( h \) prosodic onsets respectively. \( t \) and \( ç \) operate in \( h \) onsets and the exponents are consonants of the \( D \) and \( C \) groups.

Examples:

\[
\begin{align*}
&\text{h}_P^{k} \text{CC} \quad \text{kunt} \quad \text{"strong"} \\
&\text{h}_P^{k} \text{CC} \quad \text{genç} \quad \text{"young"} \\
&\text{h}_P^{t} \text{CC} \quad \text{dinq} \quad \text{"fit"} \\
&\text{h}_P^{c} \text{CC} \quad \text{cilk} \quad \text{"rotten"}
\end{align*}
\]

ii. S subsystem: There is one term in this subsystem, \( s \), which operates in \( h \) prosodic onsets, and the exponents are consonants of the \( S \) group.

Example:

\[
\begin{align*}
&\text{h}_S^{k} \text{CC} \quad \text{sort} \quad \text{"hard"}
\end{align*}
\]

iii. N subsystem: There is one term in this subsystem, \( m \), which operates in an \( h \) prosodic onset, the exponent being a consonant...
of the M group.

Example:

\[ h_{NaCC} \] mert 'brave'

iv. K subsystem: There is one term in this subsystem, h, which operates in an h prosodic onset, the exponent being a consonant of the H group.

Example:

\[ h_{K1CC} \] hirt 'half cooked'

The initial C system in \( y/w, r/r \) prosodic CVCC adjective root structure can be represented as follows:

\[ h/C_{P \cdot VCC} \]

\[ h/C_{S \cdot VCC} \]

\[ h/C_{N \cdot VCC} \]

\[ h/C_{K \cdot VCC} \]

Two subsystems, N and K, are set up for the first C of the final cluster. The N subsystem has one term, n, and the exponent is a consonant of the N group. The K subsystem has three terms, \( K_3 \), the terms being \( f, l \) and \( r \), and the exponents are consonants of the F, L and R groups. A P subsystem is set up for the final C. This has four terms, \( P_4 \), the terms being \( p, t, \)
The terms p and k operate in h endings, and the exponents are consonants of the P and K groups. ζ operates in h endings, the exponents being consonants of the ζ group when followed by a consonant or nothing, and the C group when followed by a vowel.

The term t operates in h/h endings. In h endings the exponents are consonants of the T group, in h endings consonants of the T group when followed by a consonant or nothing, and consonants of the D group when followed by a vowel.

Examples:

\[
\begin{align*}
\text{CVNP}^h_{nt} & \quad \text{kunt} & \quad \text{'strong'} \\
\text{CVNP}^h_{nζ} & \quad \text{dinc} & \quad \text{'fit'} \\
\text{CVK}^h_{Pp} & \quad \text{sarp} & \quad \text{'steep'} \\
\text{CVK}^h_{Pt} & \quad \text{sert} & \quad \text{'hard'} \\
\text{CVK}^h_{lq} & \quad \text{cilk} & \quad \text{'rotten'} \\
\text{CVK}^h_{lp} & \quad \text{kalp} & \quad \text{'fake'} \\
\text{CVK}^h_{lt} & \quad \text{qift} & \quad \text{'double'} \\
\end{align*}
\]

The possible combinations of - CC in CVCC adjective root structure can be summarized as follows:

a) \( - \text{NP when the terms are} : \quad - \text{NP}_{nt,ζ} \)

b) \( - \text{KP when the terms are} : \quad - \text{KP}_{Pp,t,k} \)

\[
\begin{align*}
- \text{KP}_{lq,p} \\
- \text{KP}_{lt} \\
\end{align*}
\]
4.3.2. Unassimilated-loan Adjective Roots

Unassimilated-loan adjective roots are very few, and unlike unassimilated-loan noun roots it is not just their phonetic features or syllabic structures that cause them to be classed as unassimilated loans. To native speakers, such adjectives are clearly associated with other unassimilated loan-words of the same or different word classes to which they are semantically related. It is the meanings of the words which make the relationship apparent, and speakers, through frequent usage, easily identify the semantic connection between them.

Examples:

\[ \text{ender} 'rare' -- \text{nadir} 'rare' \]

\[ \text{elzem} 'most necessary' -- \text{lazim} 'necessary' \]

\[ \text{haris} 'ambitious' -- \text{muhteris} 'ambitious' \]

\[ \text{leziz} 'delicious' -- \text{lezet} 'taste' \]

\[ \text{rezil} 'vile' -- \text{rezálet} 'vileness' \]

\[ \text{vakur} 'proud' -- \text{vekar} 'pride' \]
4.4. The Verb

The root in verb forms can usefully be divided into two classes, i.e.

i. pure roots

ii. derived roots

Unlike pure roots, derived roots are formed either by the addition of various suffixes or by the addition of the verbs etmek, olmak, bulmak to substantive and verb roots. Pure roots are native or assimilated loans only, whereas derived roots can be native and assimilated-loans or unassimilated-loans.

As the suffixes are discussed separately in the following chapter\(^1\), only pure verb roots are analysed here.

4.4.1. Pure Roots

Pure roots in verb forms can be monosyllabic or disyllabic. The possible root structures are as follows:

**Monosyllabic**

<table>
<thead>
<tr>
<th>CV</th>
<th>ye</th>
<th>'eat'</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVC</td>
<td>gel</td>
<td>'come'</td>
</tr>
<tr>
<td>CVCC</td>
<td>kalk</td>
<td>'get up'</td>
</tr>
<tr>
<td>VCC</td>
<td>ölç</td>
<td>'measure'</td>
</tr>
<tr>
<td>VC</td>
<td>al</td>
<td>'take'</td>
</tr>
</tbody>
</table>

**Disyllabic**

| V - CV | eri | 'melt' |
| CV - CV | koru | 'protect' |
| CV - CVC | çalıç | 'work' |

As seen from the above examples, verb roots can be C final

---

\(^1\) See Chapter 5, pp. 117–127.
or V final, and this distinction is important for the statement of various interrelations between roots and suffixes. Roots can be V initial or C initial, but this has significance only when relations between words in connected speech are being considered.

As the subsystems which can be set up for the C and V systems in monosyllabic verb root structures are applicable to disyllabic verb root structures, it is sufficient here to analyse the structure of the monosyllabic verb root only.

4.4.2. Monosyllabic Verb Root

4.4.2.1. Syllabic Structure

As mentioned above the monosyllabic verb root structure can be CV, CVC, CVCC, VCC, VC. Of these structures VC and CVC make up the majority of verb roots.

\( y/w \) and \( r/r \) prosodies operate throughout the syllable. Therefore \( y/w \), \( r/r \) prosodic monosyllabic verb root structure can be represented as:

\[
\begin{align*}
\frac{r/r}{y/w} & \quad VC(C) \\
\frac{r/r}{y/w} & \quad CV(C)(C)
\end{align*}
\]

\( h/h \) are not necessarily the same at syllable onset and syllable ending; i.e.

\[
\begin{align*}
h/h & \quad VC(C) \quad h/h \\
h/h & \quad CV(C)(C) \quad h/h
\end{align*}
\]

\(^1\) See 4.1.1.

\(^2\) V final root ending is always \( h \) prosodic as the exponent is a vowel, therefore voiced, and so \( h \) prosodic character of the V final root endings do not need to be marked in the examples.
4.4.2.2. V Systems

In the monosyllabic verb root structure, the V system has two terms, α and \( \dot{\alpha} \), except in CV and VCC structures where V system has one term only, α. Thus, the monosyllabic verb roots of CVC structure, for example, can be represented prosodically as follows, with examples of different prosodies, and terms for the V systems given.

\[
\begin{align*}
\text{\( \overset{\text{V GaC}}{\rightarrow} \text{gel} \)} & \quad \text{\( \overset{\text{V C_C}}{\text{bıl}} \)} \quad \text{\( \text{\'come'} \)} & \quad \text{\( \text{\'know'} \)} \\
\text{\( \overset{\text{w GaC}}{\rightarrow} \text{gör} \)} & \quad \text{\( \overset{\text{w C_C}}{\text{gül}} \)} \quad \text{\( \text{\'see'} \)} & \quad \text{\( \text{\'laugh'} \)} \\
\text{\( \overset{\text{w GaC}}{\rightarrow} \text{kal} \)} & \quad \text{\( \overset{\text{w C_C}}{\text{kir}} \)} \quad \text{\( \text{\'stay'} \)} & \quad \text{\( \text{\'break'} \)} \\
\text{\( \overset{\text{w GaC}}{\rightarrow} \text{foy} \)} & \quad \text{\( \overset{\text{w C_C}}{\text{kur}} \)} \quad \text{\( \text{\'put'} \)} & \quad \text{\( \text{\'wind'} \)}
\end{align*}
\]

4.4.2.3. C Systems

4.4.2.3.1. CVC Structure

In the CVC structure of the monosyllabic verb root, the following subsystems are set up for the initial C.

i. P subsystem: There are four terms in this subsystem, \( \overset{\text{P}}{\text{P_4}} \), the terms being p, t, k, q. The exponents in \( \overset{\text{P}}{\text{h}} \) prosodic onsets are consonants of the P, T, K, Q groups, and exponents in \( \overset{\text{h}}{\text{h}} \) prosodic onsets are consonants of the B, D, G, C groups.

Examples:

\[
\begin{align*}
\overset{\text{h P_4}}{\text{P}} & \quad \overset{\text{P}}{\text{piş}} \quad \text{\( \text{\'cook'} \)} \\
\overset{\text{h P_4}}{\text{P}} & \quad \overset{\text{P}}{\text{bul}} \quad \text{\( \text{\'find'} \)} \\
\overset{\text{h P_4}}{\text{t}} & \quad \overset{\text{t}}{\text{tüt}} \quad \text{\( \text{\'smoulder'} \)} \\
\overset{\text{h GaC}}{\text{P}} & \quad \overset{\text{GaC}}{\text{del}} \quad \text{\( \text{\'drill'} \)}
\end{align*}
\]
ii. S subsystem: There are two terms in this subsystem, $S_2$, the terms being $s$ and $s$. There is no contrast of $h/h$ prosodies, the terms operate in $h$ prosodic onsets only, and the exponents are consonants of the $S$ and $S$ groups.

Examples:

\[
\begin{align*}
\text{S&C} & \quad \text{be amazed}' \\
\text{S&C} & \quad \text{spread}'
\end{align*}
\]

iii. K subsystem: There are two terms in this subsystem, $K_2$, the terms being $f$ and $y$. There is no contrast of $h/h$ prosodies, the terms operate in $h$ prosodic onsets, and the exponents are consonants of the $V$ and $Y$ groups.

Examples:

\[
\begin{align*}
\text{K&C} & \quad \text{give}' \\
\text{K&C} & \quad \text{pull down}'
\end{align*}
\]

The initial C system in $y/w$, $r/r$ prosodic CVC verb root can now be represented as follows:

\[
\begin{align*}
\text{h/CVC} & \\
\text{h/CVC} & \\
\text{h/CVC} & \\
\text{h/CVC}
\end{align*}
\]
The following subsystems can be set up for the final C in CVC structure:

i. P subsystem: There are four terms in this subsystem, \( P \), the terms being \( p, t, k, \tau \). The terms \( p, k, \tau \) operate in \( h \) prosodic endings, and the exponents are consonants of the \( P, K, \tau \) groups. \( t \) operates in \( h/h \) prosodic endings, the exponents are consonants of the \( T \) group in \( h \) endings and also in \( h \) endings when followed by a consonant or nothing, but consonants of the \( D \) group when followed by a vowel in \( h \) endings.

Examples:

\[
\begin{align*}
\text{C}_p^h & \quad \text{kap} \quad \text{snatch}' \\
\text{C}_k^h & \quad \text{sök} \quad \text{uproot}' \\
\text{C}_t^h & \quad \text{biç} \quad \text{cut}' \\
\text{C}_\tau^h & \quad \text{sat} \quad \text{sell}' \\
\end{align*}
\]

ii. S subsystem: There are two terms in this subsystem, \( S \), the terms being \( \sigma \) and \( s \). There is no contrast of \( h/h \) prosodies when the term is \( \sigma \) which operates in \( h \) prosodic endings only, and the exponents are consonants of the \( \sigma \) group. \( s \) can operate in \( h/h \) prosodic endings, the exponents in \( h \) endings are consonants of the \( S \) group, and in \( h \) endings, consonants of the \( Z \) group.

Examples:

\[
\begin{align*}
\text{C}_\sigma^h & \quad \text{duş} \quad \text{fall}' \\
\text{C}_s^h & \quad \text{kes} \quad \text{cut}' \\
\text{C}_\tau^h & \quad \text{büz} \quad \text{pleat}' \\
\end{align*}
\]
iii. N subsystem: There are two terms in this subsystem, \( N_2 \), the terms being \( m \) and \( n \), which operate in \( h \) prosodic endings, and the exponents are consonants of the M and N groups.

Examples:

\[
\begin{align*}
CaN^h_m & \quad \text{gom} \quad \text{'bury'} \\
CiN^h_n & \quad \text{bin} \quad \text{'ride'}
\end{align*}
\]

iv. K subsystem: There are five terms in this subsystem, \( K_5 \), the terms being \( f, l, r, y \) and \( \ddot{g} \). There is no contrast of \( h/h \) prosodies, the terms operate in \( h \) endings only. The exponents are consonants of the V, L, R, \( Y \) groups and vowel length or velar/palatal glide.

Examples:

\[
\begin{align*}
CaK^h_f & \quad \text{dal} \quad \text{'dive'} \\
CaK^h_l & \quad \text{ver} \quad \text{'give'} \\
CaK^h_r & \quad \text{koy} \quad \text{'put'} \\
CaK^h_y & \quad \text{sav} \quad \text{'send away'} \\
CaK^h_{\ddot{g}} & \quad \text{bo\'g} \quad \text{'strangle'}
\end{align*}
\]

The final C system in \( y/w, r/\ddot{r} \) prosodic CVC verb root can now be represented as follows:

\[
\begin{align*}
\text{CVC}^{h/h} & \\
\text{CVC}^{h/h} & \\
\text{CVC}^h & \\
\text{CVC}^h & \\
\text{CVC}^h &
\end{align*}
\]
4.4.2.3.2. VC Structure

In monosyllabic verb roots of VC structure the following subsystems are set up for C system.

i. P subsystem: There are four terms in this subsystem, \( P_4 \), the terms being \( p, t, k \) and \( ç \). There is no contrast of \( h/h \) prosodies when the terms are \( p, k, ç \), these operate in \( h \) prosodic endings only, and the exponents are consonants of the \( P, K, Ç \) groups. The term \( t \) operates in \( h/h \) prosodic endings, and the exponents are consonants of the \( T \) group in \( h \) prosodic ending and also in \( h \) endings when a consonant or nothing follows, but consonants of the \( D \) group when a vowel follows in \( h \) prosodic endings.

Examples:

\[ \alpha p^h \quad \dot{o}p \quad 'kiss' \]
\[ \alpha t^h \quad \dot{t} \quad 'push' \]
\[ \alpha t^h \quad \dot{e}t \quad 'do' \]
\[ \alpha k^h \quad \dot{e}k \quad 'plant' \]
\[ \alpha q^h \quad \dot{a}q \quad 'open' \]

ii. S subsystem: There are two terms in this subsystem, \( S_2 \), the terms being \( s \) and \( \varsigma \). \( s \) operates in \( h \) prosodic endings only, and the exponents are consonants of the \( S \) group. \( \varsigma \) operates in \( h/h \) prosodic endings, the exponents are consonants of the \( S \) group in \( h \) endings, and the \( Z \) group in \( h \) endings.

Examples:

\[ \alpha s^h \quad \dot{s} \quad 'dig' \]
\[ \alpha s^h \quad \dot{a}s \quad 'hang' \]
\[ \iota s^h \quad \dot{u}z \quad 'make sad' \]
iii. N subsystem: There are two terms in this subsystem, $N_2$, the terms being $m$ and $n$ which operate in $h$ prosodic endings only, and the exponents are consonants of the $M$ and $N$ groups.

Examples:
- $aN^h_m \text{ em } \text{ 'suck'}$
- $aN^h_n \text{ an } \text{ 'remember'}$

iv. K subsystem: There are four terms in this subsystem, $K_4$, the terms being $l$, $r$, $y$, $\bar{g}$. There is no contrast of $h/h$ prosodies as the terms operate in $h$ prosodic endings, and the exponents are consonants of the $L$, $R$, $Y$ groups and vowel length or palatal/velar glide.

Examples:
- $aK^h_l \text{ al } \text{ 'take'}$
- $aK^h_r \text{ or } \text{ 'knit'}$
- $aK^h_y \text{ uy } \text{ 'obey'}$
- $aK^h_{\bar{g}} \text{ eg } \text{ 'bend'}$

The $C$ system in $y/w$, $r/r$ prosodic VC verb root can now be represented as follows:
- $VC^h_{h/4}$
- $VC^h_{h/2}$
- $VC^h_{N_2}$
- $VC^h_{K_4}$
4.4.2.3.3. CV Structure

There are only two examples with monosyllabic verb root structure CV. V has one term, a, and the following subsystems can be set up for C.

i. P subsystem: This has only one term, t, which operates in h prosodic onset. The exponent is [ d ].
Example:
\[
\text{h}_t \text{ de 'say'}
\]

ii. K subsystem: This has one term, y, which operates in h prosodic onset, and the exponent is [ j ].
Example:
\[
\text{h}_y \text{ ye 'eat'}
\]

The C system in y/r prosodic verb root can now be represented as follows:
\[
\text{h}_t \text{ P}V
\]
\[
\text{h}_y \text{ K}V
\]

4.4.2.3.4. CVCC Structure

In verb root structure CVCC two subsystems are set up for the initial C.

i. P subsystem: There are three terms in this subsystem, P, the terms being t, k and q. The terms k and q operate in h prosodic onsets only, and the exponents are consonants of the K and q groups. t operates in h/h prosodic onsets, the exponents in h prosodic onset is [ t ], and in h prosodic onset [ d ].
Examples:

\[
\begin{align*}
\h^P_{1} & \quad \text{kirp} \quad \text{'shear'} \\
\h^P_{	ext{S}} & \quad \text{carp} \quad \text{'beat'} \\
\h^P_{	ext{S}} & \quad \text{tart} \quad \text{'weigh'} \\
\h^P_{	ext{K}} & \quad \text{d"urt} \quad \text{'touch'}
\end{align*}
\]

ii. \( S \) subsystem: This has one term, \( s \), which operates in \( h \) prosodic onsets, and the exponents are consonants of the \( S \) group.

Examples:

\[
\begin{align*}
\h^S_{S} & \quad \text{serp} \quad \text{'scatter'} \\
\h^S_{S} & \quad \text{s"urt} \quad \text{'rub against'}
\end{align*}
\]

iii. \( K \) subsystem: This has one term, \( y \), which operates in \( h \) onsets, the exponents being consonants of the \( Y \) group.

Examples:

\[
\begin{align*}
\h^S_{K} & \quad \text{yont} \quad \text{'chip into shape'} \\
\h^S_{K} & \quad \text{yirt} \quad \text{'tear up'}
\end{align*}
\]

The initial \( C \) system in \( w/r \) prosodic CVCC verb root structure can now be represented as follows:

\[
\begin{align*}
\h^P_{C} & \quad \h^S_{C} & \quad \h^K_{C}
\end{align*}
\]
The syllable ending of the CVCC structure is h prosodic with no contrast of h/\h prosodies. N and K subsystems are set up for the first C of the cluster. K subsystem has two terms, K_2, the terms being l and r with consonants of the L and R groups as exponents. N subsystem has one term, n, and the exponent is a consonant of the N group. A P subsystem is set up for the final C. This has four terms, P, the terms being p, t, k and ç, and the exponents are consonants of the P, T, K and ç groups.

Examples:

- CaN_{\text{h}}E_{\text{n}}^{\text{t}} \quad \text{yont} \quad '\text{chip into shape}'
- CaK_{\text{h}}E_{\text{p}}^{\text{h}} \quad \text{serp} \quad '\text{scatter'}
- C_{\text{t}}K_{\text{p}}^{\text{h}}E_{\text{t}}^{\text{h}} \quad \text{surt} \quad '\text{rub against} '
- C_{\text{t}}K_{\text{p}}^{\text{h}}E_{\text{ç}}^{\text{h}} \quad \text{sûrç} \quad '\text{stumble} '
- CaK_{\text{l}}E_{\text{k}}^{\text{h}} \quad \text{kalk} \quad '\text{get up} '

The possible combinations of C C, i.e. final cluster, can be summarized thus:

a) - NP when the terms are: \(- N_{\text{h}}E_{\text{n}}^{\text{t}}\)

b) - KP when the terms are: \(- K_{\text{p}}E_{\text{t}}^{\text{t}}, K_{\text{p}}, ç\)

- \(K_{\text{k}}E_{\text{l}}^{\text{k}}\)

4.4.2.3.5. VCC Structure

There are only three verbs with VCC structure. \(V\) has one term, \(a\). A two term K subsystem is set up for the first C, the terms being l and r, with exponents [l] and [ç]. A P subsystem with two terms, t and ç, is set up for the final C. The terms operate in h prosodic syllable endings and the exponents are [ç],[ç] and [ç].
Examples:

- $\alpha K P_t^h$ art 'increase'
- $\alpha K P_t^h$ ort 'cover'
- $\alpha K P_t^h$ olq 'measure'

The possible combinations within the cluster in VCC structure can be summarized as:

- KP when the terms are:
  - $\alpha K P_t^h$
  - $\alpha K P_t^h$

4.5. Summary and Comparison of Initial and Final Systems

The following tables are set out for the comparison of initial and final C systems in CVC, CVCC and CV-CVCC noun, adjective and verb root structures to show the differences in different word classes.

I. CVC Structure

<table>
<thead>
<tr>
<th>Noun</th>
<th>Adjective</th>
<th>Verb</th>
<th>Noun</th>
<th>Adjective</th>
<th>Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>$h_p^h$</td>
<td>$h_p^h$</td>
<td>$h_p^h$</td>
<td>$p_t^h$</td>
<td>$p_t^h$</td>
<td>$p_t^h$</td>
</tr>
<tr>
<td>$h_p^h$</td>
<td>$h_p^h$</td>
<td>$h_p^h$</td>
<td>$p_t^h$</td>
<td>$p_t^h$</td>
<td>$p_t^h$</td>
</tr>
<tr>
<td>$h_s^h$</td>
<td>$h_s^h$</td>
<td>$h_s^h$</td>
<td>$s_t^h$</td>
<td>$s_t^h$</td>
<td>$s_t^h$</td>
</tr>
<tr>
<td>$h_s^h$</td>
<td>$h_s^h$</td>
<td>$h_s^h$</td>
<td>$s_t^h$</td>
<td>$s_t^h$</td>
<td>$s_t^h$</td>
</tr>
<tr>
<td>$h_n^h$</td>
<td>$h_n^h$</td>
<td>$h_n^h$</td>
<td>$n_t^h$</td>
<td>$n_t^h$</td>
<td>$n_t^h$</td>
</tr>
<tr>
<td>$h_m^h$</td>
<td>$h_m^h$</td>
<td>$h_m^h$</td>
<td>$m_t^h$</td>
<td>$m_t^h$</td>
<td>$m_t^h$</td>
</tr>
<tr>
<td>$h_r^h$</td>
<td>$h_r^h$</td>
<td>$h_r^h$</td>
<td>$r_t^h$</td>
<td>$r_t^h$</td>
<td>$r_t^h$</td>
</tr>
<tr>
<td>$h_y^h$</td>
<td>$h_y^h$</td>
<td>$h_y^h$</td>
<td>$y_t^h$</td>
<td>$y_t^h$</td>
<td>$y_t^h$</td>
</tr>
</tbody>
</table>

Table II
II. CVCC Structure

<table>
<thead>
<tr>
<th>Initial C</th>
<th>Final:CC-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Noun</strong></td>
<td><strong>Adjective</strong></td>
</tr>
<tr>
<td>$h_P^{P,t,k,q}$</td>
<td>$h_P^{P,k}$</td>
</tr>
<tr>
<td>$h_P^{P,t,k,q}$</td>
<td>$h_P^{P,t,k,q}$</td>
</tr>
<tr>
<td>$h_N^{s,s}$</td>
<td>$h_N^{s}$</td>
</tr>
<tr>
<td>$h_N^{m}$</td>
<td>$h_N^{m}$</td>
</tr>
<tr>
<td>$h_K^{t,h}$</td>
<td>$h_K^{t}$</td>
</tr>
<tr>
<td>$h_K^{x,y}$</td>
<td>$h_K^{x,y}$</td>
</tr>
<tr>
<td>$K_{P,t}^{p,t,k}$</td>
<td>$K_{P,t}^{p,t,k}$</td>
</tr>
<tr>
<td>$K_{P,t}^{p,t,k}$</td>
<td>$K_{P,t}^{p,t,k}$</td>
</tr>
<tr>
<td>$K_{P,t}^{p,t,k}$</td>
<td>$K_{P,t}^{p,t,k}$</td>
</tr>
<tr>
<td>$K_{P,t}^{p,t,k}$</td>
<td>$K_{P,t}^{p,t,k}$</td>
</tr>
<tr>
<td>$K_{S,s}^{s}$</td>
<td>$K_{S,s}^{s}$</td>
</tr>
<tr>
<td>$K_{S,s}^{s}$</td>
<td>$K_{S,s}^{s}$</td>
</tr>
<tr>
<td>$S_{P,t,k}^{s}$</td>
<td>$S_{P,t,k}^{s}$</td>
</tr>
</tbody>
</table>

*Table III*
### III. CV-CVC Structure

<table>
<thead>
<tr>
<th>Initial C</th>
<th>Adjective</th>
<th>Final C</th>
<th>Adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun</td>
<td>Adjective</td>
<td>Noun</td>
<td>Adjective</td>
</tr>
<tr>
<td>$h_{p,t,k,q}$</td>
<td>$h_{p,t,k,q}$</td>
<td>$p^h_t$</td>
<td>$p^h_t$</td>
</tr>
<tr>
<td>$h_{p,t,k,q}$</td>
<td>$h_{p,t,k}$</td>
<td>$p^h_{p,t,k,q}$</td>
<td>$p^h_{k,q}$</td>
</tr>
<tr>
<td>$h_{g,s}$</td>
<td>$h_{g,s}$</td>
<td>$g^h_{s,s}$</td>
<td>$g^h_{s}$</td>
</tr>
<tr>
<td>$h_{g}$</td>
<td>$h_{g}$</td>
<td>$g^h_{s}$</td>
<td>$g^h_{s}$</td>
</tr>
<tr>
<td>$h_{n,m,n}$</td>
<td>—</td>
<td>$p^h_{m,n}$</td>
<td>$n^h_{m,n}$</td>
</tr>
<tr>
<td>$h_{k}$</td>
<td>$h_{k}$</td>
<td>$k^h_{n}$</td>
<td>$k^h_{n}$</td>
</tr>
<tr>
<td>$h_{k,h,l,r,y}$</td>
<td>$h_{k}$</td>
<td>$k^h_{r,l,r,y}$</td>
<td>$k^h_{l,r}$</td>
</tr>
</tbody>
</table>

Table IV
CHAPTER FIVE

Affixes

5.1. Introduction

The affixes in Turkish can be analysed into two main groups.

i. native Turkish affixes

ii. non-native Affixes

The native Turkish affixes are suffixes, that is they are affixed to the end of words. The non-native affixes are borrowed mainly from Arabic and Persian with a few from French and English, and consist of prefixes and suffixes which are mostly affixed to unassimilated loan-words. These affixes have very limited usage, are non-harmonic\(^1\), and mainly unproductive in the present day language. These factors make it impossible to consider them as assimilated\(^2\).

5.2. Native Turkish Suffixes

Suffixes of different grammatical categories are treated

\(^1\) The suffix 'yor' which originally was an independent verb 'yorir', (see Lewis, op.cit.p.108), and is non-harmonic, is treated as a native Turkish suffix as it operates in very much the same way as other tense suffixes.

\(^2\) For non-native affixes see 5.3.
together as there is basically no difference in the phonological statements required for these categories. Suffixes which are no longer productive and not used frequently in colloquial speech are not included in the analysis.

5.2.1. Suffix Structures

Native Turkish suffixes can have the following structures:

a) V onset
   i. Monosyllabic: V, VC
   ii. Disyllabic: V-CV, VC-CV, V-CVC

b) C onset
   i. Monosyllabic: C, CV, CVC
   ii. Disyllabic: C-CV, CV-CV

5.2.2. Prosodies

Suffixes get their y/w and r^/r^ prosodic character from the base^ to which they are affixed^3. As for h/h prosodies, subsystems S, N, K of the suffix initial C operate in h/h prosodic onset regardless of the h/h prosodic character of the base ending. The h/h prosodic character of the suffix onset depends on the h/h character of the base ending when the suffix initial is P_{\gamma K,\zeta} except in the onomatopoeic substance forming suffix^1, and in suffix structure C_{\xi} which is always h_{\xi}. The h/h prosodic character of

---

1 This is not relevant when suffix V system is a for which see 6.2.2.
2 The term 'base' is used to cover 'root' and 'root + suffixes' as some of the suffixes analysed in this chapter can be suffixed to the suffixed forms of the root as well as to the root.
3 The prosodic character of any suffix which presents an exception to this statement is given when suffix structures are analysed.
4 See p. 123, footnote 2.
suffix ending and onset in different suffix structures is shown when suffix structures are analysed.

5.2.3. V Systems

The V systems in suffix structure can be α or γ, or where there are two Vs in the suffix, the V systems can be the same, i.e.

\[ \alpha = \alpha \]

or different, i.e.

\[ \gamma = \gamma \]
\[ \gamma = \alpha \]
\[ \alpha = \gamma \]

The phonetic exponents of α and γ functioning within the different prosodic systems are the same as for roots.

5.2.4. C Systems

The following subsystems with the maximum possible terms for initial and final positions are set up for the C systems in suffix structure.

P subsystem — Initial\(^3\): t, k, ç
Final : p, t, k, ç

S subsystem — Initial : s, s
Final : s, s

N subsystem — Initial : m, n
Final : m, n

K subsystem — Initial : l, r, y
Final : l, r, y

---

\(^1\) See 5.2.5.
\(^2\) See 4.1.2.
\(^3\) i.e. suffix initial which in C initial monosyllabic suffixes coincides with syllable initial.
The phonetic exponents of the terms functioning within the different prosodic systems are the same as for roots.

5.2.5. Analysis of the Suffix Structures

Structures of the suffixes included in this thesis are analysed below. The suffixes are classified according to their structure and type of onset, viz. V or C.

5.2.5.1. V Initial Suffixes

A. Monosyllabic

I. V

i. a

   i.  Dative case suffix
   2. Subjunctive mood suffix

ii. i

   i.  Accusative case suffix
   2. De-verb substantive suffix

II. VO

i. aC

   a) akh
   b) akh

   en.: Present participle suffix
   er.: Distributive numeral suffix

1 See 5.2.
2 The front articulated forms of the suffixes are taken as citation forms as these are the forms normally used in Turkish for uttering the suffixes in isolation. They are in the orthography.
3 Suffixes are in the main named as in Lewis' 'Turkish Grammar', except in those cases where a distinction has to be made for purposes of description that Lewis does not make, or where Lewis does not name the suffix but only describes its function.
ii. C

a) \( \sqrt[p, t, k]{p} \) : \( \sqrt[p]{p} \) ip : Gerund suffix

\( \sqrt[k]{k} \) it : De-verb substantive suffix

\( \sqrt[k]{k} \) ik : De-verb substantive suffix

b) \( \sqrt[s, q]{s} \) iz : Person pluralizing suffix

1. and 2. persons

\( \sqrt[q]{q} \) igs : Verbal noun suffix

c) \( \sqrt[m, n]{m} \) im : 1. De-verb substantive suffix

2. 1. person singular suffix

Type I

\( \sqrt[n]{n} \) in : 1. De-verb substantive suffix

2. Genitive case suffix

da) \( \sqrt[1]{1} \) il : Passive suffix

B. Disyllabic

I. V-CV

i. \( \alpha^{-h\sqrt[1]{1}} \) e-li : Gerund suffix

ii. \( l^{-h\sqrt[1]{1}} \) i-ci : De-verb substantive suffix

II. VC-CV

\( \sqrt[n]{n}^{-h\sqrt[1]{1}} \) in-ce : Gerund suffix

\( ^1 \) This suffix is now used with C final bases only.

\( ^2 \) This suffix is now used with C final bases only.

\( ^3 \) This suffix is now used with C final bases only.

\( ^4 \) 'il' can be suffixed to all verb roots except where the root final is V or \( K_1 \) in which case the passive suffix is \( N_1 \). See 5.2.6.2 Aliii.
III. V-CVC

i. $\alpha - h_{l_{k}} h_{q_k}$ e-cek : Future suffix

ii. $\alpha - h_{l_{k}} h_{q_k}$ e-rek : Gerund suffix

5.2.5.2. C Initial Suffixes

A. Monosyllabic

I. C

i. $E_{t_{t_{t_{t}}} q}$

$P_{t}$ t : De-verb suffix — causative

$P_{k}$ k : 1. 1st person plural suffix — Type II

2. De-verb substantive suffix

$P_{q}$ q : De-verb substantive suffix

ii. $S_{h_{s_{s}} q}$

$S_{h}$ z : Collective numeral suffix

1. Aorist negative suffix (1.
and 2. persons sg. and pl.)

$S_{q}$ q : De-verb verb suffix — reciprocal

iii. $N_{h_{m_{m}}} m$

$N_{m}$ m : 1. 1st person sg. suffix — Type II

2. Possessive suffix (1. person)

$N_{n}$ n : 1. De-verb verb suffix — reflexive

2. 2nd person sg. suffix — Type II

3. Possessive suffix 2. person

4. Passive suffix 1

1 See p. 111, footnote 4.
iv. $K^h_{1,r,y}$

$k_1$ l : De-substantive verb suffix

$k_r$ r : Aorist suffix

$k_y$ y : Copula suffix

II. CV

a) Ca

i. $P^a_{t,q}$

$P^a_t$ de : i. Locative case suffix

2. Onomatopoeic verb forming suffix

$P^a_q$ ce : De-substantive substantive suffix — diminutive

ii. $h^a_s$

se : Conditional suffix

iii. $h^a_m$

me : Negative suffix

iv. $h^a_1$

le : i. De-substantive verb suffix

2. Onomatopoeic verb forming suffix

b) Ci

i. $P^t_{t,k,q}$

$h^t_{P_t}$ ti : Onomatopoeic substantive forming suffix

$P^t_t$ di : Past suffix

$P^t_k$ gi : De-verb substantive suffix

$P^t_q$ ci : De-substantive substantive suffix

---

1 This suffix does not occur in absolute final position, it is always followed by another suffix.

2 The suffix onset is always h prosodic regardless of the h/h prosodic character of the base ending.
iii. $h^N_m$

mi: Interrogative suffix

iv. $h^K_l$

li: De-substantive substantive suffix

III. CVC

1. $E_V^h C^h/h$

a) $PaC^h$

i. $PaN^h$

den: Ablative case suffix

ii. $PaN^k$

gen: De-verb substantive suffix

iii. $y^hPaN^k$

ken: Gerund suffix

b) $P^h C^h$

i. $P^hK^k$

dir: De-verb verb suffix – causative

ii. $P^hN^k$

gin: De-verb substantive suffix

iii. $P^hP^cK^k$

cik: De-substantive substantive suffix – diminutive

2. $h^SVC^h$

a) $SaK^h$

sel: De-substantive substantive suffix

b) $S^hC$

i. $S^hS^k$

siz: De-substantive substantive suffix

ii. $S^hN^k$

sin: 4th Personal suffix (Imperative – 3rd person)

---

1 Although Lewis calls this the interrogative particle it is treated as a suffix here, as it functions phonologically in the same way as the other suffixes.

2 ken is always h onset /y prosodic regardless of the h/h ending and y/w prosodic character of the base.
1. 2. person singular suffix — Type I

3. \( h_{NV/Ch}^{h/h} \)

a) \( N_{m} \)
   i. \( NaP_{m} \) mek: Infinitive suffix
   ii. \( NaN_{m} \) men: De-verb substantive suffix

b) \( N_{m} \)
   i. \( NaS_{m} \) miq: miq past/inferential suffix

4. \( h_{CV/Ch}^{h/h} \)

a) \( K_{1} \)
   i. \( KaK_{y} \) ler: Plural suffix
   ii. \( E_{y} KaK_{y} \) yor: Present tense suffix

b) \( K_{1} \)
   i. \( K_{1} P_{k} \) lik: De-substantive substantive suffix
   ii. \( K_{1} N_{m} \) lim: 1. person plural suffix — Type III

B. Disyllabic

I. C-CV

\( \frac{h_{CV}}{N_{m}} \)

a) \( N_{m} \)
   mse: De-substantive verb suffix

b) \( N_{m} \)
   i. \( N_{m} \)
   msi: De-substantive substantive suffix
   ii. \( N_{m} \) nci: Ordinal numeral suffix

\(^{1}\)yor is always w/r prosodic regardless of the prosodic character of the base.
5.3. Non-native Affixes

In this section the structure of the four non-native affixes which are productive, is analysed. Other non-native affixes are no longer productive, and as mentioned on p. 117, they have limited occurrences as affixed to unassimilated loanwords.

5.3.1. The Structure of the Non-native Affixes

Non-native affixes do not take their prosodic character from the bases to which they are affixed, and therefore prosodies are given for each structure.

A. Suffixes

I. CV - CV

i. \( N_{n} - h_{l} \) nti : De-verb substantive suffix

ii. \( N_{n} - h_{l} \) meli : Necessitative suffix

II. CVC - CVC

\( h_{m} - h_{l} \) masyon : is used to make nouns

B. Prefixes

VC - CV

\( \alpha_{n} - h_{l} \) anti : indicates a state of being against something
5.4. Conclusions

The analysis of the suffix structures in the above section shows that in suffixes terms of the subsystems for C in initial and final positions are restricted compared to roots. This restriction of terms can be shown in tables V and VI as follows.

**Initial C**

<table>
<thead>
<tr>
<th>Root</th>
<th>p</th>
<th>t</th>
<th>k</th>
<th>ç</th>
<th>s</th>
<th>ʁ</th>
<th>m</th>
<th>n</th>
<th>f</th>
<th>h</th>
<th>l</th>
<th>r</th>
<th>y</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffix</td>
<td>-</td>
<td>t</td>
<td>k</td>
<td>ç</td>
<td>s</td>
<td>ʁ</td>
<td>m</td>
<td>n</td>
<td>-</td>
<td>-</td>
<td>l</td>
<td>r</td>
<td>y</td>
<td>-</td>
</tr>
</tbody>
</table>

Table V

**Final C**

<table>
<thead>
<tr>
<th>Root</th>
<th>p</th>
<th>t</th>
<th>k</th>
<th>ç</th>
<th>s</th>
<th>ʁ</th>
<th>m</th>
<th>n</th>
<th>f</th>
<th>-</th>
<th>l</th>
<th>r</th>
<th>y</th>
<th>ğ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffix</td>
<td>p</td>
<td>t</td>
<td>k</td>
<td>ç</td>
<td>s</td>
<td>ʁ</td>
<td>m</td>
<td>n</td>
<td>-</td>
<td>-</td>
<td>l</td>
<td>r</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table VI
CHAPTER SIX

Junction Prosodies

6.1. Introduction

There are many juncture points in connected speech in Turkish which exhibit interesting features. The present chapter analyses types of juncture between 'root + suffix', and 'suffix + suffix' which occur in a slow style of speech, and junction prosodies are set up to show these relations. Apart from y/w, r/r prosodies, junction prosodies depend on the type of base ending and suffix onset. Therefore, the same suffix can have different junction prosodies with different bases, depending on the base ending.

6.2. Root + Suffix Junction Prosodies

6.2.1. y/w Prosodies

The y/w prosodic character of the suffixes is determined by the y/w prosodic character of the roots to which they are affixed. Therefore these prosodies extend over root and suffix.

---

1 See Chapter 8 for junctures in a quick style of speech.

2 See, for example, C final root + N_{m}CV, 6.2.10, and V final root + N_{m}CV, 6.2.12.
This is applicable to all suffixes\(^1\) except 'yor' and 'ken\(^2\) and non-native affixes\(^3\).

Examples:

\[
\begin{align*}
\text{seker} + \text{de} & \quad \text{in sugar}'^4 \\
\text{tuz} + \text{da} & \quad \text{in salt}' \\
\text{seker} + \text{li} & \quad \text{'sweet'} \\
\text{tuz} + \text{lu} & \quad \text{'salted'}
\end{align*}
\]

6.2.2. \(r\) Prosody

\(r\) prosody can be set up as a junction prosody only where the suffix V system is 1 and no a intervenes between the 1 syllable of the suffix and the root. In other words, unlike \(y/w\) prosodies \(r\) prosody does not extend over the root and suffix regardless of suffix V systems.

Examples:

i. Suffix V system :

\[
\begin{align*}
\text{tuz} + \text{lu} & \quad \text{'salted'}
\end{align*}
\]

---

1 i.e. suffixes analysed in this thesis.

2 See p. 125, 5.2.5.2 AIII 4a, and p. 124, 5.252.AIII 1a.

3 Junctions of roots and non-native affixes are not analysed here. Their junctions/roots are more like those of word+word, i.e. there is no harmony, and therefore no \(y/w\), \(r/r\) junction prosodies.

4 In each section only the junction prosody under discussion is shown in the examples.
ii. Suffix V system α :

\[ \overline{P_s} \overline{t} + \overline{P_a} \overline{t} \] tuz + da 'in salt'

iii. Suffix V system α – t :

\[ \overline{P_s} \overline{K_t} + \overline{P_a} \overline{K_i} \] gör + eli 'since seeing'

6.2.3. r Prosody

Unlike r prosody, r prosody extends over root and suffix regardless of suffix V systems.

Examples:

i. Suffix V system 1 :

\[ \overline{S} \overline{a} \overline{P_s} \overline{K_t} + \overline{K_t} \] şeker + li 'sweet'

ii. Suffix V system α :

\[ \overline{S} \overline{a} \overline{P_s} \overline{K_t} + \overline{P_a} \overline{t} \] şeker + de 'in sugar'

iii. Suffix V systems α – t :

\[ \overline{P_s} \overline{K_i} + \overline{aK_t} \] bil + eli 'since knowing'

6.2.4. H Prosody

I. C final roots + V initial suffixes, i.e. – C + V –

Suffixes with V onset have H prosodic junction with C final roots where the subsystems P, S, N, K function in a h
prosodic root ending. The exponent of the prosody is syllabification and voice, i.e., root final C syllabifies with the suffix.

Examples:

i. \( CVS_{h}^{h} + V \rightarrow CV-SV_{h} \)
   
   boz + i \rightarrow bo-su \quad 'the grey'

ii. \( CVF_{p}^{h} + V \rightarrow CV-PV_{p} \)
   
   dip + i \rightarrow di-bi \quad 'the bottom'

iii. \( V-CVF_{k}^{h} + V \rightarrow V-CV-PV_{k} \)
   
   elek + i \rightarrow ele-ği \quad 'the sieve'

iv. \( CVN_{m}^{h} + V \rightarrow CV-NV_{m} \)
   
   cam + e \rightarrow ca-ma \quad 'to the window'

v. \( VN_{h}^{h} + VC \rightarrow V-NVC_{h} \)
   
   on + er \rightarrow o-nar \quad 'ten each'

vi. \( CVE_{t}^{h} + VC \rightarrow CV-EVC_{t} \)
   
   git + en \rightarrow gi-den \quad 'one who goes'

vii. \( CVS_{k}^{h} + VC \rightarrow CV-SVC_{k} \)
   
   kaz + iş \rightarrow ka-ziğ \quad 'digging'

viii. \( CVK_{p}^{h} + VC \rightarrow CV-KVC_{p} \)
   
   gör + ip \rightarrow gö-rüp \quad 'after seeing'
ix. \( CV_{S}^{h} + VC \rightarrow CV_{S}^{H} \)

göz + ik \( \rightarrow \) gö-zük

'appear'

x. \( CV-CVK_{\frac{1}{2}} + VC \rightarrow CV-CV_{\frac{1}{2}}^{H} \)

güzel + im \( \rightarrow \) gü·ze·lim

'I am beautiful'

xi. \( CV_{\frac{1}{2}}^{h} + VC \rightarrow CV_{\frac{1}{2}}^{H} \)

yay + in \( \rightarrow \) ya·yın

'publication'

xii. \( CV-CVN_{h}^{h} + VC \rightarrow CV-CV_{\frac{1}{2}}^{H} \)

kadin + iz \( \rightarrow \) kadi·niz

'we are women'

xiii. \( CV_{\frac{1}{2}}^{h} + VC \rightarrow CV_{\frac{1}{2}}^{H} \)

ger + il \( \rightarrow \) ge·ril

'be stretched'

xiv. \( CV_{\frac{1}{2}}^{h} + V-CV \rightarrow CV_{\frac{1}{2}}^{H} \)

bul + eli \( \rightarrow \) bu·la·li

'since finding'

xv. \( CV_{S}^{h} + V-CV \rightarrow CV_{S}^{H} \)

yaz + ici \( \rightarrow \) ya·zi·ci

'one who writes'

xvi. \( CV_{\frac{1}{2}}^{h} + VC-CV \rightarrow CV_{\frac{1}{2}}^{H} \)

kov + in ce \( \rightarrow \) ko·vun·ca

'when he dismisses'

xvii. \( CV_{m}^{h} + V-CVC \rightarrow CV_{m}^{H} \)

göm + ecek \( \rightarrow \) gö·me·cek

'he will bury'
xviii. $CVS^h_S + V-CVC \rightarrow CV-SV-CVC$

$\text{yüz} + \text{e-rek} \rightarrow \text{yüz-ze-rek} \quad \text{"by swimming"}$

II. C final roots + C initial suffixes, i.e. $\text{C + C -}$

A. Suffixes with $h_C$ onset have $H$ prosodic junction with C final roots where the subsystems $P$, $S$, $N$, $K$ function in a $h$ root ending. The exponent of the prosody relation is voice except for the junction of $-h^P + P -$ where the exponent is voicelessness (see examples vii and viii below).

Examples:

i. $CVN^h_m + PVC \rightarrow CVN^h_m - PVC$

$\text{cam} + \text{den} \rightarrow \text{cam-dan} \quad \text{"from the window"}$

ii. $CVN^h_n + hKVC \rightarrow CVN^h_n - KVC$

$h\text{an} + \text{ler} \rightarrow \text{han-lar} \quad \text{"inns"}$

iii. $VK^K_1 + PV \rightarrow VK^K_1 - PV$

$\text{el} + \text{de} \rightarrow \text{el-de} \quad \text{"in hand"}$

iv. $VK^K_1 + PVC \rightarrow VK^K_1 - PVC$

$\text{ev} + \text{çik} \rightarrow \text{ev-çik} \quad \text{"dear little house"}$

v. $CVK^K_1 + hNVC \rightarrow CVK^K_1 - NVC$

$\text{say} + \text{men} \rightarrow \text{say-man} \quad \text{"accountant"}$

vi. $CV-CVP^h_p + hKVC \rightarrow CV-CVP^h_p - KVC$

$\text{ço rap} + \text{ler} \rightarrow \text{ço rap-lar} \quad \text{"socks"}$
vii.  \( CVP^h_p + \text{EV}_t \rightarrow CVP^H_p - \text{EV}_t \)  
\( \text{dip} + \text{den} \rightarrow \text{dip-ten} \) 'from the bottom'

viii.  \( CV-CVF^h_k + \text{EV}_t \rightarrow CV-CVF^H_k - \text{EV}_t \)  
\( \text{ka pak} + \text{de} \rightarrow \text{ka-pak-ta} \) 'on the lid'

ix.  \( CV-CVS^h_s + \text{h}_KVC \rightarrow CV-CVS^H_s - KVC \)  
\( \text{te miz} + \text{lik} \rightarrow \text{te-miz-lik} \) 'cleanliness'

B. C final roots where the subsystems P, S, K function in a root ending also have H prosodic junction with \( h_0 \) onset suffixes, with voice at suffix onset as the exponent.

Examples:

i.  \( VP^h_p + \text{h}_KVC \rightarrow VP^H_p - KVC \)  
\( \text{ip} + \text{ler} \rightarrow \text{ip-ler} \) 'ropes'

ii.  \( CVF^h_t + \text{h}_NVC \rightarrow CVF^H_t - NVC \)  
\( \text{sat} + \text{mek} \rightarrow \text{sat-mak} \) 'to sell'

iii.  \( VS^h_s + \text{h}_KVC \rightarrow VS^H_s - KVC \)  
\( \text{iš} + \text{li} \rightarrow \text{iš-li} \) 'embroidered'

iv.  \( CVK^h_t + \text{h}_KVC \rightarrow CVK^H_t - KVC \)  
\( \text{küf} + \text{li} \rightarrow \text{küf-lu} \) 'mouldy'

v.  \( CVS^h_s + \text{h}_KVC \rightarrow CVS^H_s - KVC \)  
\( \text{boş} + \text{lik} \rightarrow \text{boş-luk} \) 'emptiness'
hC onset suffixes of the following structures are exceptions to this type of prosodic relation with C final roots:

\[ h_{KVC}^{V}, h_{NVC}^{N} \]

For the juncture of these suffixes with C final roots see 6.2.10.

III. V final roots + C initial suffixes, i.e. \( V+C \)

Where the root ending is V and the suffix onset is Cp or hC N, there is also H prosodic junction with voice as the exponent.

Examples:

i. \( CV-CV + PV \rightarrow CV-CV - PV \)
   ko va + den ko-va-dan 'from the bucket'

ii. \( V-CV + PV \rightarrow V-CV - PV \)
    o ku + di o-ku-du 'he read'

iii. \( V-CV + h_{NVC}^{N} \rightarrow V-CV - NVC \)
    a ra + mek a-ra-mak 'to look for'

iv. \( V-CV + PV \rightarrow V-CV - PV \)
    i ri + ce i-ri-ce 'quite large'

v. \( CV-CV + h_{KVC}^{K} \rightarrow CV-CV - KVC \)
    ke qi + ler ke-qi-ler 'goats'

The types of junction where H prosody operates may be summarized as follows:
I. \( -c^h + \{h_v - h_c - \}
\]

II. \( -c_p^h + s, k^+ - h_c - \)

III. \( -v + \{h_c, n, k - c_f - \}
\]

6.2.5. H Prosody

I. C final roots + V initial suffixes, i.e. \(-C + V -\)

Suffixes with V onset have H prosodic junction with C

final roots where the subsystems P, S, K function in a h root

ending. The exponence of the prosodic relation is syllabification

and voicelessness.

Examples:

i. \( CV^p v \) + V \( \rightarrow CV^p \)

sap + i \( \rightarrow s-a-p 1 \) \('\text{the handle}'\)

ii. \( CV^t v \) + VC \( \rightarrow CV^t \)

sat + en \( \rightarrow s-a-ta-n \) \('\text{one who sells}'\)

iii. \( V^k v \) + VC \( \rightarrow V^k \)

ak + iš \( \rightarrow a-k1-a \) \('\text{flow}'\)

iv. \( CV^t v \) + V \( \rightarrow CV^t \)

sač + i \( \rightarrow s-a-c 1 \) \('\text{the hair}'\)

v. \( CV^2 v \) + V \( \rightarrow CV^2 \)

sis + i \( \rightarrow si-si \) \('\text{the fog}'\)
vi. \( VS^h_s + V \rightarrow V - SV \)

\( iš + e \rightarrow i-še \) 'to work'

vii. \( CVS^h_s + V \rightarrow CV - SV \)

\( boš + i \rightarrow bo-šu \) 'the empty one'

viii. \( CVK^h_t + V \rightarrow CV - KV \)

\( kūf + i \rightarrow kū-fū \) 'the mould'

II. C final roots + C initial suffixes, i.e. - C + C -

A. Suffixes with \( ^hC \) onset have \( H \) prosodic relationship with C final roots where the subsystems P, S, K function in a h root ending. The exponence of the prosodic relation is voicelessness.

Examples:

i. \( VP^h_p + PV^h_c \rightarrow VP - PV^h_c \)

\( ip + den \rightarrow ip-ten \) 'from rope'

ii. \( CVP^h_t + PV^h_c \rightarrow CVP - PV^h_c \)

\( süt + çi \rightarrow süt-çü \) 'milkman'

iii. \( VP^h_k + hSVC^h_s \rightarrow VP - SVC^h_s \)

\( ek + siz \rightarrow ek-siz \) 'whole'

iv. \( CVS^h_s + EVC^h_t \rightarrow CVS - EVC^h_t \)

\( beš + den \rightarrow beš-ten \) 'from five'

v. \( VS^h_s + hSVC^h_s \rightarrow VS - SVC^h_s \)

\( eš + siz \rightarrow eš-siz \) 'matchless'
vi. $\text{CVK}^h_h + \text{SVC}^h_s \rightarrow \text{CVK}^h_h \text{SVC}^h_s$

   ruh + siz ruh-suz 'lifeless'

B. Suffixes with $^h_C$ onset have $^H$ prosodic relationship with
C final roots where the subsystems $P$, $S$, $N$, $K$ operate in a $^h_k$ root
ending. The exponent of the prosody relation is voicelessness.

Examples:

i. $\text{CVK}^h_p + \text{SVC}^h_s \rightarrow \text{CVK}^h_p \text{SVC}^h_s$

   dip + siz dip-siz 'bottomless'

ii. $\text{CVN}^h_s + \text{SVC}^h_s \rightarrow \text{CVN}^h_s \text{SVC}^h_s$

   tuz + siz tuz-suz 'unsalted'

iii. $\text{CVN}^h_h + \text{SVC}^h_s \rightarrow \text{CVN}^h_h \text{SVC}^h_s$

   kan + siz kan-siz 'bloodless'

iv. $\text{CVK}^h_r + \text{SVC}^h_s \rightarrow \text{CVK}^h_r \text{SVC}^h_s$

   gör + se gör-se 'if he sees'

$^h_C$ onset suffix of $^S_s$ structure is an exception to this

Type of prosodic relation with C final roots.

III. V final roots + C initial suffixes, i.e. $- V + C -$

Where the root ending is V and the suffix onset is C with

---

1 For the juncture of this suffix with C final roots see 6.2.9
subsystem $S$ functioning in $h$ onset, there is also $H$ prosodic junction with voicelessness as the exponent.

Examples:

i. \[ CV-CV + h_{SV}^S \quad CV-CV - SV \]
   \[ ba-ba + si \quad ba-ba-si \quad 'his father' \]

ii. \[ CV-CV + h_{SVC}^S \quad CV-CV - SVC \]
    \[ ka-pi + siz \quad ka-pi-siz \quad 'without a door' \]

The junctions where $H$ prosody operates may be summarized as follows:

I. \[ c_{h}^{P,S,K} \quad \{ V - \quad h_{O} - \} \]

II. \[ c_{h}^{P,S,N,K^+} \quad h_{O} - \]

III. \[ V \quad + \quad h_{O} - \]

6.2.6. $J$ Prosody

$V$ final roots + $V$ initial suffixes, except suffixes of $aK_T$ and $\chi_h$ structure, have their relationship marked by $J$ prosody, the exponent of which is the voiced palatal frictionless continuant, i.e. \([ j ]\).

Examples:

i. \[ CV-CV + V \quad CV-CV - V \]
   \[ ba-ba + i \quad ba-ba-yi \quad 'the father' \]
ii. CV-CV + V \rightarrow CV-CV^{J}V
sari + i \rightarrow sari ya 'the yellow'

iii. V-CV + V \rightarrow V-CV^{J}V
ova + e \rightarrow ova ya 'to the valley'

iv. CV-CV + VC \rightarrow CV-CV^{J}VC
yürū + iş \rightarrow yürū yüş 'walking'

v. CV-CV + VC \rightarrow CV-CV^{J}VC
koru + en \rightarrow koru yan 'one who protects'

6.2.7. N Prosody

V final roots + V initial suffix of \( i_N \) structure have their relationship marked by N prosody, the exponent of which is a denti—alveolar nasal.

Examples:

i. CV-CV + \( i_N \) \rightarrow CV-CV^{N}N
masa + in \rightarrow masa nin 'of the table'

ii. CV-CV + \( i_N \) \rightarrow CV-CV^{N}N
kişi + in \rightarrow kişi nin 'of the men'

6.2.8. S Prosody

V final roots + V initial suffix of \( a_K \) structure have their relationship marked by S prosody, the exponent of which is the
palato-alveolar sibilant, i.e. [ʃ].

Examples:

i. $V-CV + \alpha K_r \rightarrow V-CV^S_{-\alpha K_r}$
   
   iki + er → iki şer 'two each'

ii. $VC-CV + \alpha K_r \rightarrow VC-CV^S_{-\alpha K_r}$

   altı + er → altı şar 'six each'

6.2.9. $\xi$ Prosody

C final roots + C initial suffixes of $S_V$, structure have their relationship marked by $\xi$ prosody, the exponence of which is the absence of a phonetic exponent for suffix initial $C$.

Example:

i. $VC + S^V_{\xi} \rightarrow VC_{-\xi}^S$
   
   ev + si → ev i 'his house'

ii. $CVC + S^V_{\xi} \rightarrow CVC_{-\xi}^S$

   kol + si → kol u 'his arm'

iii. $VC + S^V_{\xi} \rightarrow VC_{-\xi}^S$

   ip + si → ip i 'his rope'

6.2.10. $\eta$ Prosody

C final roots + suffixes of the structures $C$ and $C-CV$ with subsystems $K_r$, $S_m$, $N_m$, $\eta$ and $N-CV$, have their relationships
marked by a prosody, the exponence of which is syllabicity characterized by openness when the suffix structure is $P_k$, openness or closeness when the structure is $K_{1,r}^1$, and closeness when the suffix structure is $S$, $N$ and $N-CV$.

'yor' which is treated as a suffix, viz. $KVC_y$, fits into this pattern as it also has this type of junction with $C$ final roots, characterized by closeness.

Examples:

1. $CVC + P_k \rightarrow CVC^{\alpha}P_k$
   bat + k \quad batak \quad 'marsh'

2. $CVC + S_S \rightarrow CVC^{\alpha}S_S$
   beş + z \quad beş iz \quad 'quintuplet'

3. $CVC + S_S \rightarrow CVC^{\alpha}S_S$
   bul + ş \quad bul uş \quad 'discovery'

4. $VC + N_m \rightarrow VC^{\alpha}N_m$
   ev + m \quad ev im \quad 'my home'

5. $CVC + N_n \rightarrow CVC^{\alpha}N_n$
   böl + n \quad böl ün \quad 'be divided'

6. $VC + K_1 \rightarrow VC^{\alpha}K_1$
   az + l \quad az al \quad 'reduce'

7. $CVC + K_r \rightarrow CVC^{\alpha}K_r$
   bin + r \quad bin er \quad 'he rides'

---

1 In thirteen monosyllabic verb roots ending in $-K + K$ suffix, syllabicity is characterized by closeness, in the rest, it is characterized by openness.
6.2.11. cc Prosody

Polysyllabic C final roots of \( K_{r} \) ending + C structure suffix with subsystem \( \rho_{r} \), and those of \( N_{h} \) ending + the suffix \( \rho_{c} \), have their relationships marked by cc prosody, the exponent of which is a consonant cluster. Cf. 6.2.10 where the C initial suffixes are linked by e prosody with exponence of syllabicity.

Examples:

i. \( CV-CVC + \rho_{t} \rightarrow CV CVC^{cc} \rho_{t} \)

\( düzel + t \rightarrow düzele \) 'rectify'

ii. \( V-CVC + \rho_{t} \rightarrow V CVC^{cc} \rho_{t} \)

\( otur + t \rightarrow oturt \) 'make sit down'

iii. \( V-CVC + \rho_{c} \rightarrow V CVC^{cc} \rho_{c} \)

\( inan + ç \rightarrow inanc \) 'belief'
6.2.12. F Prosody

V final roots + suffixes of the structures C and C-CV

with the subsystems $p_t, k', s, q, n_m, k, n_{-CV}$ have their relationships marked by F prosody, the exponence of which is syllable finality.

Example:

i. CV-CV + $P_k$$\rightarrow$ CV-CV$^F_P$
   tara + k tarak 'comb'

ii. V-CV + $h_s$$\rightarrow$ V-CV$^F_s$
   iki + z ikiz 'twin'

iii. CV-CV + $h_s$$\rightarrow$ CV-CV$^F_s$
   tanlı + $q$ tanıq 'be introduced'

iv. CV-CV + $N_m$$\rightarrow$ CV-CV$^F_m$
   baba + m babam 'my father'

v. V-CV + $N_n$$\rightarrow$ V-CV$^F_n$
   ara + n aran 'look out'

vi. CVC-CV + $K_l$$\rightarrow$ CVC-CV$^F_l$
   sivri + l sivril 'sharpen'

vii. VC-CV + $K_r$$\rightarrow$ VC-CV$^F_r$
   anla + r anlar 'he understands'
viii. \[ \text{CVC-CV} + \text{K} \leftarrow \rightarrow \text{CVC CV}^{\text{F}} \text{K} \leftarrow \rightarrow 1 \]
\[ \text{hasta} + \text{y} \leftarrow \rightarrow \text{hastay} \leftarrow \rightarrow \text{'be ill'} \]

ix. \[ \text{CV-CV} + \text{NCV} \leftarrow \rightarrow \text{CV-CV}^{\text{F}} \text{NCV} \]
\[ \text{sari} + \text{msi} \rightarrow \text{sarimsi} \text{'yellowish'} \]

x. \[ \text{VC-CV} + \text{NCV} \leftarrow \rightarrow \text{VC-CV}^{\text{F}} \text{NCV} \]
\[ \text{alti} + \text{nci} \rightarrow \text{altinci} \text{'sixth'} \]

xi. \[ \text{V-CV} + \text{NCV} \leftarrow \rightarrow \text{V-CV}^{\text{F}} \text{NCV} \]
\[ \text{iyi} + \text{mse} \rightarrow \text{iyimse} \text{'be optimistic'} \]

6.2.13. i Prosody

V ending roots + the suffix of KVC structure have their relationship marked by i prosody, the exponence of which is closeness.

Examples:

i. \[ \text{VC-CV} + \text{KVC} \leftarrow \rightarrow \text{VC-CV}^{\text{i}} \text{KVC} \]
\[ \text{anla} + \text{yor} \rightarrow \text{anliyor} \text{'he is understanding'} \]

ii. \[ \text{CVC-CV} + \text{KVC} \leftarrow \rightarrow \text{CVC-CV}^{\text{i}} \text{KVC} \]
\[ \text{bekle} + \text{yor} \rightarrow \text{bekliyor} \text{'he is waiting'} \]

iii. \[ \text{CV-CV} + \text{KVC} \leftarrow \rightarrow \text{CV-CV}^{\text{i}} \text{KVC} \]
\[ \text{koru} + \text{yor} \rightarrow \text{koruyor} \]

1 See p. 123, footnote 1.
6.2.14. O Prosody

C final roots + the suffix K have their relationship marked by O prosody, which indicates that there is no phonetic exponent for the suffix. As K is always followed by another suffix this following suffix, in such cases, has its junction directly with the base.

Examples:

i. \( CVS^{h} + K_{y} + EV \rightarrow CVS^{h} K_{y} P \)
   \( bo\text{"} + y + di \rightarrow bo\text{"}tu \ 'it was empty' \)

ii. \( CV-CVK^{h} + K_{y} + h_{NVC} \rightarrow CV-CVK^{h} K_{y} NVC \)
   \( gu\text{"}zel + y + mi\text{"} \rightarrow gu\text{"}zelmi\text{"} \ 'it was said to be beautiful' \)

6.2.15. Summary of Root + Suffix Junction Prosodies

The various junction prosodies discussed above have contrasting functions at different types of junctions. The types of contrasting prosodies can be shown as follows according to the type of junction they mark.

- \( J, N, S \) prosodies mark relation of: \(- V + V -\)
- \( \emptyset, e, cc, O, H, H \) prosodies mark relation of: \(- C + C -\)
- \( H, H \) prosodies mark relation of: \(- C + V -\)
- \( F, i, H, H \) prosodies mark the relation of: \(- V + C -\)
- \( y/w, r/r \) prosodies mark relation of all types of junctions, i.e. \(- V + V -, - C + C -, - C + V -, - V + C -\), and they co-occur with any of the prosodies given above.
Within the different types of junction the specific prosodic relation of a suffix to a root is dependant on the type of root to which it is suffixed. Hence, a grammatically same suffix has different junction prosodies depending on the root final C and V systems and the prosodic character of the root ending.

For example, the junction of 3rd person possessive suffix $S_v^1$ with a C final root is marked by $\emptyset$ prosody, e.g.

$$VC^\emptyset S_v^1 \text{ evi 'his home'}$$

but the junction of V final root $+ S_v^1$ is marked by H prosody, e.g.

$$CVCV^H S_v^1 \text{ babası 'his father'}$$

The suffix 'ci' of $P_i^q$ structure has H prosodic junction with $- C^h$ ending root, e.g.

$$CVF^H P_i^q \text{ sutçu 'milkman'}$$

but H prosodic junction with $- C^h$ ending root, e.g.

$$CVN^H P_i^q \text{ camcı 'glazier'}$$

6.3. Suffix + Suffix Junction Prosodies

The junction of suffix + suffixes, i.e., base + suffixes, have similar prosodies to those set up for root + suffix junctures. The only exception is the junction of the suffix $S_v^1 +$ case suffixes where an n prosody, the exponent of which is a consonant of the N group, is set up to mark the prosodic relation of the suffix + suffix junction$^1$.

i. $$CV-CV^H S_v^1 + \alpha \text{ baba + si + e babasına 'to his father'}$$

$^1$ cf. N prosody, 6.2.7
ii. \(VC + S_s + i\)  
\(ev + si + i\)  
evini 'his house (obj)'

iii. \(CVC + S_s + p_VC\)  
\(ev + si + den\)  
evinden 'from his house'
CHAPTER SEVEN

Onomatopoeia and Reduplication

7.1. Onomatopoeia

Onomatopoeic words constitute a relatively small portion of the vocabulary, but exhibit phonetically and phonologically interesting features. As unsuffixed bases\(^1\) they are used for direct imitation of various sounds, and by means of suffixation and reduplication\(^2\) they function as nouns, adjectives, adverbs and verbs. They are more frequently used in reduplicated form.

In this chapter unsuffixed onomatopoeic bases are analysed. The characteristics of these are that, compared to non-onomatopoeic bases, the structures that can be set up for them and the subsystems of the C and V systems in these structures, especially in disyllabic bases are restricted.

When unsuffixed onomatopoeic bases are used in direct imitation of various sounds they have length as a phonetic feature of the final consonant, unless the final consonant is a plosive, when the preceding vowel is lengthened\(^3\), e.g.

\[ \text{[f\text{x}:]} \quad \text{fiŋ} \quad \text{'a hissing or rustling sound'} \]

\(^1\) No grammatical analysis has been made for onomatopoeic words in unsuffixed form, so they are referred to here as bases for convenience of description.

\(^2\) See 7.2.

\(^3\) See 7.1.1.1 for length established as a syllable prosody at the phonological level.
7.1. Structure of Unsuffixed Onomatopoeic Bases

These, in the main, have the following structures:

Monosyllabic
- CVC
- CVCC

Disyllabic
- CVC-CVC
- CV-CVC

7.1.1. Prosodies

The y/w, r/r, h/h prosodies which have been set up for root structures in Chapter Four are applicable to onomatopoeic bases, except that α does not operate in y/r structures and that the structures are usually r or r throughout, there are very few examples to the contrary, e.g.,

\[ ^{y/r}C_t^{-}\text{GoC} \]

Prosodies will not therefore be shown in the examples except for h/h which require to be marked to show the contrasts within the C subsystems.

A syllable prosody of length is set up for syllables of CVC structure functioning as the final syllable in unsuffixed forms. The exponents of this are:

i. Lengthening of the final consonant unless the subsystem for final C is F, e.g.,

\[ ^{L_{C_{i}S_{h}}} \]

\[ [\text{guz}:] \]

\[ \text{ciz} \]

'a sizzling noise, usually associated with a painful injection'

1 r prosody can operate with α in any syllable of an onomatopoeic base, not only the first, as in \[ ^{W}_{C_{i}C-C-C_{o}C} \]
cumburlot 'a sudden dip in water', but such bases are very few, and have restricted usage.
151

\[ C_i \rightarrow C + k_i \]  
\[ [x_i] } \]  
\[ h_1 \]  
\[ 'a rustling sound' \]

1. Lengthening of the prefinal vowel when the final C is P, e.g.

\[ L_{C_p}^h \]  
\[ [p:it] \]  
\[ p a t \]  
\[ 'the noise of a heavy fall' \]

\[ C_{p}^h \]  
\[ [cy:it] \]  
\[ k u t \]  
\[ 'bang' \]

7.1.1.2. V Systems

In monosyllabic structures the V system can be \( \alpha \) or \( \iota \).

In disyllabic structures V systems can be:

\[ \alpha = \iota \]

or

\[ \iota = \iota \]

or

\[ \iota = \alpha^2 \]

7.1.1.3. C Systems

The subsystems which can be set up for the C systems in various structures of the onomatopoeic bases, with the possible terms for each subsystem, are given below. The phonetic exponents are as for roots, for which see Ch.4.

1. CVC Structure.

The following subsystems are set up for initial C.

1. P subsystem: There are four terms in this subsystem, p, t, k, q, which operate in h/h prosodic onsets.

Examples:

\[ \text{pof} \]  
\[ 'a soft explosion' \]

\[ \text{bum} \]  
\[ 'imitating an explosion' \]

\[ \text{tis} \]  
\[ 'indicating silence' \]

\[ \text{dan} \]  
\[ 'imitating a metallic banging noise' \]

---

1 Phonetic exponents are as for roots, see p. 65.
2 \( \iota - \alpha \) is restricted to CV-CVC structure.
\[ h_{\text{P}C}^k \quad \text{kut} \quad 'bang' \]
\[ h_{\text{P}C}^k \quad '' \quad 'a heavy fall' \]
\[ h_{\text{P}C}^q \quad \text{qit} \quad 'crack' \]
\[ h_{\text{P}C}^q \quad \text{cup} \quad 'object falling into a liquid, usually water' \]

ii. S subsystem: There are two terms, \( \text{s} \) and \( \text{S} \). \( \text{s} \) operates in \( h \) prosodic, and \( \text{S} \) in \( h \) prosodic onsets.

Examples:
\[ h_{\text{sC}}^q \quad \text{sak} \quad 'clapping' \]
\[ h_{\text{sC}}^q \quad \text{zip} \quad 'jumping up and down' \]

iii. N subsystem: There is one term, \( \text{m} \), which operates in \( h \) prosodic onsets.

Example:
\[ h_{\text{N}C}^m \quad \text{mir} \quad 'humming' \]

iv. K subsystem: There are four terms, \( \text{f} \), \( h \), \( l \), \( r \). \( \text{f} \) operates in \( h/h \) prosodic onsets. \( h \) operates in \( h \), and \( l \) and \( r \) in \( h \) prosodic onsets.

Examples:
\[ h_{\text{fC}}^l \quad \text{foq} \quad 'hollow' \]
\[ h_{\text{fC}}^l \quad \text{vun} \quad 'noise of a flying bullet, arrow, etc' \]
\[ h_{\text{fC}}^l \quad \text{höf} \quad 'boo' \]
Subsystems for initial C can now be shown thus.\(^1\):

\[
\begin{align*}
&h/K_1C \quad \text{lup} \quad 'gulp' \\
&h/K_3C \quad \text{rap} \quad 'marching'
\end{align*}
\]

The following subsystems are set up for the final C system in CVC:

\[h/h_{\text{CVC}}\]

\[h/h_{\text{CVC}}\]

\[h_{\text{CVC}}\]

\[h/h_{\text{CVC}}\]

i. P subsystem: There are three terms in this subsystem, p, t, k, which operate in h prosodic endings.

Examples:

\[\text{cap}^h_p \quad \text{hop} \quad 'jumping'\]

\[\text{cap}^h_t \quad \text{düt} \quad 'sound of a whistle'\]

\[\text{cap}^h_k \quad \text{lök} \quad 'slump'\]

ii. S subsystem: There are two terms, q and s. q operates in h, and s in h/h prosodic endings.

---

\(^1\) See p. 73 , footnote 1 .
iii. N subsystem: There are two terms, m, n, which operate in h prosodic endings.

Examples:

\[
\begin{align*}
C_1^h N_m^h & \text{ gum } 'a \text{ heavy fall}' \\
C_1^h N_n^h & \text{ tin } 'hollowness'
\end{align*}
\]

iv. K subsystem: There are two terms, f, r, f operates in h, and r in h prosodic endings.

Examples:

\[
\begin{align*}
C_1^h K_f^h & \text{ puf } 'blowing out, candles, etc' \\
C_1^h K_r^h & \text{ hor } 'snoring'
\end{align*}
\]

Subsystems for final C can now be shown as follows:

\[
\begin{align*}
\text{CVC}_3^h \\
\text{CVC}_2^{h/h} \\
\text{CVC}_2^h \\
\text{CVC}_2^{h/h}
\end{align*}
\]
II. CVCC Structure

The following subsystems are set up for initial C:

i. P subsystem: There are three terms in this subsystem, p, c, k. p and k operate in \( h \) prosodic onsets, q operates in \( h \) prosodic onsets.

Examples:

- \( h_{P1CC} \) part 'bulging'
- \( h_{P1CC} \) kirt 'cutting'
- \( h_{P2CC} \) cart 'tearing, cloth, paper, etc'

ii. S subsystem: There is one term, s, which operates in \( h \) prosodic onsets.

Example:

- \( h_{S1CC} \) zink 'jerk'

iii. K subsystem: There is one term, h, which operates in \( h \) prosodic onsets.

Example:

- \( h_{KCC} \) hist 'calling to attention or to keep quiet'

The subsystems for initial C can now be shown as follows:
The following subsystems are set up for final CC:

The ending of CVCC has no contrast of h/h prosodies, as it is phonetically voiceless it may be described as h prosodic. Three subsystems with one term each are set up for the first C of the cluster, viz. S, N, K. A subsystem is set up for the second C, this has two terms, k and t.

Examples:

- CaKP\text{\textsubscript{Ft}}
- CaNP\text{\textsubscript{h k}}
- CaSP\text{\textsubscript{h t}}

'biting fiercely'
'throb'
'calling to attention or to keep quiet'

The possible combinations of CC can be summarized as follows:

- SP when the terms are: \text{\textsubscript{SP}}\text{\textsubscript{t}}
- NP when the terms are: \text{\textsubscript{NP}}\text{\textsubscript{h k}}
- KP when the terms are: \text{\textsubscript{KP}}\text{\textsubscript{t}}

III. CVC-CVC Structure

In CVC-CVC structure, with the exception of the initial C, all C systems are very restricted, and only certain subsystems can be set up in the context of others. The restricted subsystems function in y/w, r/r structures with h/h syllable onsets and endings, and are shown below with various examples.
Subsystems possible for initial C are:

\[ h_P, h, h \]

Examples:

- \( h_{P_1 N} - h_{P K} \) — tingir — 'metallic noise'
- \( h_{P_2 N} - h_{P K} \) — çingir — 'ringing of bell, etc'
- \( h_{P_3 N} - h_{P K} \) — bangir — 'very loud shouting'
- \( h_{S_1 N} - h_{P K} \) — çangir — 'breaking of glass, etc'
- \( h_{S_2 N} - h_{P K} \) — zangir — 'strong trembling'
- \( h_{K_1 N} - h_{P K} \) — fingir — 'in a swaying motion'
- \( h_{K_2 N} - h_{P K} \) — hûngûr — 'crying'
- \( h_{K_3 N} - h_{P K} \) — langir — 'movement of something bulky'
Subsystems possible for initial C is \( h_p \)

Example:

\[ h_{K_{/m}} - P_{/r} \]

'gumberland'  'thundering noise'

Subsystems possible for initial C are: \( h_p \)

\[ h_{K_{/f}, h} \]

Examples:

\[ h_{K_{/m}} - P_{/r} \]

'gumberland'  'gush'

\[ h_{K_{/f}} - P_{/r} \]

'fildar'  'rapid circling movement'

\[ h_{K_{/m}} - P_{/r} \]

'haldar'  'rough behaviour'

### IV. CV–CVC Structure

As in CVC–CVC structure, with the exception of the initial C, C systems are restricted in this structure, and not all permutations are possible. The systems operate in \( y/w, r/r \) structures with \( h/h \) syllable onsets and endings. The main grouping is done according to the subsystems set up for the final C, and further subdivision of each group is based on the subsystems that can be set up for the medial and initial C as illustrated below.
A. CV - CVP

a) CV - h

i. PV - PVP

\[ \text{b} \text{loik} \quad \text{'stickiness, mostly in connection with jam, etc'} \]

ii. KV - PVP

\[ \text{v} \text{ick} \text{ik} \quad \text{'stickiness, mostly in connection with oil, mud'} \]

b) CV - h

i. PV - KVP

\[ \text{cy} \text{ak} \quad \text{'shrill voice'} \]

ii. KV - KVP

\[ \text{v} \text{iy} \text{ak} \quad \text{'screaming of a baby'} \]

B. CV - CVK

l. CV - CVK

a) CV - SVK

i. NV - h

\[ \text{m} \text{ig} \text{al} \quad \text{'sleeping deeply'} \]
ii. KV - \( \frac{h}{h}gVK \)

\( h_{K_1} - h_{S_1}K_1 \) fasıl 'whispering'

\( h_{K_1} - h_{S_1}K_1 \) vizıl 'vibrating noise, e.g. buzzing'

b) CV - \( \frac{h}{h}NVK \)

\( h_{P_1} - N_1K_1 \) kamıl 'continuous movements'

c) CV - \( \frac{h}{h}KVK \)

i. PV - KVK

\( h_{P_1} - K_1K_1 \) piril 'shimmering'

\( h_{P_1} - K_1K_1 \) tiril 'thinness'

\( h_{P_1} - K_1K_1 \) gürül 'noise of strong flow of water'

ii. SV - KVK

\( h_{S_1} - K_1K_1 \) ziril 'persistent, complaining voice'

iii. NV - KVK

\( h_{N_1} - K_1K_1 \) miril 'mumbling'
iv. KV - KVK

\[ \text{firil} \quad '\text{whirling}' \]

\[ \text{horul} \quad '\text{snort}' \]

2. CV - CVK

a) CV - PVK

i. 1. \[ \text{P}^k_{\text{PV}} - \text{P}^\alpha_{\text{PVK}} \]

\[ \text{k} \quad '\text{crunchy}' \]

2. \[ \text{P}^k_{\text{PV}} - \text{P}^\alpha_{\text{PVK}} \]

\[ \text{g} \quad '\text{squeaky}' \]

ii. SV - PVK

\[ \text{p}^\alpha_{\text{PV}} - \text{P}^k_{\text{PVK}} \]

\[ \text{g} \quad '\text{noise of rainfall}' \]

iii. KV - PVK

\[ \text{h}^k_{\text{PV}} - \text{h}^\alpha_{\text{PVK}} \]

\[ \text{höpur} \quad '\text{drinking something noisily}' \]

\[ \text{fakir} \quad '\text{boiling}' \]

\[ \text{lakir} \quad '\text{swallow}' \]
\[ h_{K^\alpha} - h_{P^r} \quad \text{lopur} \quad \text{'eating noisily'} \]

b) CV - SVK

i. PV - h_{SVK}

\[ h_{P^r} - S_{1K} \quad \text{czir} \quad \text{'sizzling'} \]

ii. KV - SVK

1. h_{KV} - h_{SVK}

\[ h_{K^\alpha} - h_{S^r} \quad \text{fisir} \quad \text{'bubbly'} \]

\[ h_{K^\alpha} - h_{S^r} \quad \text{fisir} \quad \text{'swollen'} \]

\[ h_{K^\alpha} - h_{S^r} \quad \text{hashir} \quad \text{'rustle'} \]

2. h_{KV} - h_{SVK}

\[ h_{K^\alpha} - h_{S^r} \quad \text{vazir} \quad \text{'swiftness'} \]

c) CV - NVK

\[ h_{K^\alpha} - h_{N^r} \quad \text{homur} \quad \text{'grumble'} \]
a) CV - KVK

i. PV - KVK

1. $h_{PV} - h_{KVK}$

\[
\begin{align*}
  h_{p}^{r} - h_{k}^{r} & \quad \text{püfür} \quad \text{'}breezy' \\
  h_{k}^{r} - h_{k}^{r} & \quad \text{küfür} \quad \text{'}coolness' 
\end{align*}
\]

2. $h_{PV} - h_{KVK}$

\[
\begin{align*}
  h_{P}^{r} - h_{K}^{r} & \quad \text{cayir} \quad \text{'}burning' 
\end{align*}
\]

ii. KV - KVK

\[
\begin{align*}
  h_{K}^{r} - h_{K}^{r} & \quad \text{yuvar} \quad \text{'}roundness' 
\end{align*}
\]

7.1.1.4. Conclusions

In conclusion, as a result of the analysis of onomatopoeic bases, it is seen that they differ in several respects from bases that are not onomatopoeic, viz. in C systems, V systems and prosodies:

C systems

i. Apart from CVC, C systems operate in restricted permutations in the structures, and final C systems are very restricted.

ii. No N subsystems with the term n can be set up for initial or final C in any of the structures.
V systems

a does not operate in y/r prosodic structures.

Prosodies

With a very few exceptions the structures are r or r prosodic throughout.

7.1.1.5. Junction of Onomatopoeic Bases + Suffixes

Onomatopoeic bases have similar types of junction prosodies with suffixes that can be affixed to them as those which have been set up for noun, adjective and verb roots + suffixes.

Examples:

i. \(CaC;K^h_1 + P\alpha\) \(CaC;K^H\) \(\rightarrow P\alpha\) horul + de horulda 'breathe heavily'

ii. \(C;C;K^h_1 + P\alpha\) \(C;C;K^H\) \(P\alpha\) piril + ti piralti 'shimmering light'

iii. \(C;S^h_1 + P\alpha\) \(C;S^H\) \(P\alpha\) fiş + le fişla 'go fizzy'

---

1 See p. 123, 5.2.5.2.A II bi.
7.2. Reduplication

Reduplication is the total or partial repetition of the syllabic structure of a given base with no intervening pause\(^1\). All onomatopoeic bases can be reduplicated as is the case with bases of most nouns, adjectives, adverbs and verbs.

Reduplication can be of the following types:

I. Simple reduplication

II. Complex reduplication

The two types are discussed in the sections below.

**Type I — Simple Reduplication**

In this type of reduplication the whole of a structure is repeated with no change in prosodies and C and V systems. Such reduplicatives function as adjectives or adverbs.

Examples:

- *kapı 'door'* — reduplicated as: *kapı kapı 'door to door'*
- *yavaş 'slow'* — reduplicated as: *yavaş yavaş 'slowly'*
- *fingir 'in a swaying motion'* — reduplicated as: *fingir fingir 'coquettish'*
- *gıcır 'squeaky'* — reduplicated as: *gıcır gıcır 'brand new'*
- *bol 'loose'* — reduplicated as: *bol bol 'ample'*

**Type II — Complex Reduplication**

Complex reduplication is accomplished in various ways:

i. Where a structure is repeated with a change in the r/r prosody

\(^1\) Prosodies and subsystems for C and V systems of the structures to be reduplicated, i.e., the base, are not given as these have already been discussed in the various sections on root structures and onomatopoeia.
which may or may not be accompanied by a change in the V systems. Such reduplicatives function as adjectives and adverbs.

Examples:

**C initial**

a) with change in V systems

kara 'black' \( ^{C}CaCa^{C} \) — reduplicated as: kara kuru 'very dark and thin'

\[ ^{C}CaCa^{C} _{C_{1}} \]

gacir 'creaking' \( ^{C}CaC_{1}C \) — reduplicated as: gacir gucur 'creaking'

\[ ^{C}CaC_{1}C _{C_{1}C_{1}} \]

b) without change in V systems

fašır 'rapid flow of water' \( ^{C}CaC_{1}C \) — reduplicated as: fašır foşur 'overflowing'

\[ ^{C}CaC_{1}C ^{C}CaC_{1}C \]

**V initial**

In reduplicatives with V initial bases, the relationship of the base + reduplicated part is marked by P prosody, the exponent of which is a consonant of the B group when the exponent of the term in the subsystem set up for first C of the reduplicated part is voiced, and a consonant of the P group when the exponent of the said term is voiceless.

Examples:

eski 'old' \( ^{C}a-C_{1}C \) — reduplicated as: eski pūskū 'tattered'

\[ ^{C}a-C_{1}C _{\mathcal{P}} ^{h}S_{S}^{h}C_{1} \]

ezik 'crushed' \( ^{C}a-C_{1}C \) — reduplicated as: ezik büzük 'dented'

\[ ^{C}a-C_{1}C _{\mathcal{P}} ^{h}S_{S}^{h}C_{1} \]
Where the whole or a part of a structure is repeated with no change of prosody. This is possible in two ways:

a) A structure is repeated with the exception of the first C in C initial bases, and the base and the reduplicated part have their relationship marked by M prosody, the exponents of which are consonants of the M group. C initial bases where an N subsystem with the term m has been set up for C cannot be reduplicated in this way, e.g. muz, 'banana'. In such cases the word falan 'etc' can be used instead of the reduplicated base to give the same meaning, e.g. muz falan, 'banana and the like'.

Reduplicatives formed in this way function as nouns or adjectives.

Examples:

*zengin* 'rich' CαCCtC — reduplicated as: zengin mengin 'rich and so on'

\[\text{M} \]
\[\text{CαCCtC} --- \text{tCCtC}\]

*güzel* 'beautiful' CτCaC — reduplicated as: güzel müzel

\[\text{M} \]
\[\text{CτCaC} --- \text{tCaC}\]

*sari* 'yellow' CaCi — reduplicated as: sari mari 'yellow and the like'

\[\text{M} \]
\[\text{CaC} \quad \text{αCi}\]

V initial

*až* 'little' aC — reduplicated as: až maz 'little and so on'

\[\text{M} \]
\[\text{aC} --- \text{aC}\]

*oda* 'room' aCα — reduplicated as: oda moda 'room and the like'

\[\text{M} \]
\[\text{aCα} --- \text{aCα}\]

*uzun* 'long' τCtC — reduplicated as: uzun muzun 'long and so on'

\[\text{M} \]
\[\text{τCtC} --- \text{CtC}\]
b) Where the initial (C) V is reduplicated and is followed by the base. The reduplicated part and the base have different prosodic links according to whether the base is C initial or V initial. The reduplicatives formed in this way function as adjectives or adverbs.

**C initial**

An x prosody is set up for the junction of the reduplicated part and the C initial base, the exponents of which are consonants of the P, M, S or R groups. It does not seem possible to give rules to show which prosodic link will occur between a reduplicated part and a base, but each base has one of the prosodic links obligatorily.

Examples:

- yeni 'new' CaC: reduplicated as: yepyeni 'brand new'
  \[\text{Ca}^x\text{C} \rightarrow \text{Ca}^x\text{C} (\text{exponent of } x-[p])\]
- mor 'purple' CaC: reduplicated as: mosmor 'black and blue'
  \[\text{Ca}^x\text{C} \rightarrow \text{Ca}^x\text{C} (\text{exponent of } x-[s])\]
- boş 'empty' CaC: reduplicated as: bomboş 'completely empty'
  \[\text{Ca}^x\text{C} \rightarrow \text{Ca}^x\text{C} (\text{exponent of } x-[m])\]
- temiz 'clean' CaC: reduplicated as: tertemiz 'spotless'
  \[\text{Ca}^x\text{C} \rightarrow \text{Ca}^x\text{C} (\text{exponent of } x-[x])\]

**V initial**

A p prosody is set up for the junction of the reduplicated part and a V initial base, the exponent of which is a consonant of the P group.
Examples:

açık 'open' aC1C — reduplicated as: apaçık 'wide open'

islak 'wet' iCCaC — reduplicated as: ipislak 'very wet'

aci 'bitter' aC1 — reduplicated as: apaci 'very bitter'

Some bases can be reduplicated in a number of ways.

For example, kara 'black' can be reduplicated as:

1. kara kara — Type I
2. kara kuru — Type II i a
3. kara mara — Type II ii a
4. kapkara — Type II ii b

Reduplicatives have similar types of junction with various suffixes as non-reduplicated bases.
CHAPTER EIGHT

Some Aspects of Discourse Harmony

8.1. Introduction

Intra-word harmony has already been discussed, and junction prosodies have been set up for the junction of base + suffix in a slow style of speech. In the following sections some aspects of discourse harmony in a quick style of speech are examined, and prosodies are set up for the different types of harmony to show some possible prosodic links between words. Harmonizing features that occur within words, but only in quick speech are also examined.

The analysis is based on phonic data recorded over a period of time and observations made during conversations between speakers of Istanbul Turkish. Only features that occur regularly in speech have been taken into account, and a sample of contexts is given to illustrate these features. Where certain features occur only in specific contexts this has been noted. Some of the prosodies set up for base + suffix junctions in Chapter 6 are also relevant for word + word junctions.

This analysis is not claimed to be exhaustive and it is possible that further types of harmony could be found if a full study of discourse were to be made.

1 See 2.8, and Chapter 6, pp. 128-148.
8.2. Inter-word and Intra-word Junction Prosodies

8.2.1. y Prosody

y prosody is set up to show front harmony between words. When a word with w prosodic ending is followed by a V initial word with y prosodic onset, the junction is y prosodic. The exponent of y prosodic junction is frontness of the last one or two syllables of the preceding word when the inter-word junction is —V + V—, and syllabification\(^1\) and a palatalized articulation for the final consonant of the preceding word when the junction is —C + V—.

Examples:

\(-V+V-\) junction:

Londraya ilk defa geçen sene geldim.\(^2\)

\[ \text{[londra} \underline{\text{y}} \text{a i}l\text{c}] \quad \text{[londax}j\underline{\text{i}} \text{ı}lc] \]

\[ \quad -V+V- \quad \quad \quad \quad \quad -V+i\text{\textsuperscript{y}}V- \]

' I came to London for the first time last year.'

ii. \(-C+V-\) junction

Kovan içinde arılar var.

\[ \text{[koven i}\underline{\text{v}}i\underline{\text{p}}\underline{\text{ı}}\underline{\text{ı}}] \quad \text{[kove} \underline{\text{n}}i\underline{\text{v}}i\underline{\text{p}}\underline{\text{ı}}\underline{\text{ı}] } \]

\[ \quad -C+V- \quad \quad \quad \quad \quad -C+\text{\textsuperscript{y}}V- \]

' There are bees in the hive.'

---

\(^1\) For syllabification at inter-word junction see 8.2.6. Only the junction prosody under discussion is marked in the examples in each section.

\(^2\) Words whose junction is examined are underlined in each sentence. The phonetic transcriptions on the left are for slow style, and those on the right for quick style.
8.2.2.  **w Prosody**

w prosody is set up to show back harmony between words. When a word with y prosodic ending is followed by a V initial word with w prosodic onset, the junction is w prosodic. The exponent of y prosodic junction is backness of the last syllable of the preceding word where the inter-word junction is \(-V + V-\), and syllabification and a non-palatal articulation for the final consonant of the preceding word where the junction is \(-C + V-\).

Examples:

i.  \(-V + V-\) junction

'What are you looking for?'

\[ \text{Ne arlyorsun?} \]

\[ \begin{array}{cc}
\text{[ ne \ wryjorsun ]} & \text{[ ne \ wryjosun ]} \\
\end{array} \]

\[ \begin{array}{c}
\text{\(-V + W_{-}\)} \\
\end{array} \]

\[ \begin{array}{c}
\text{\(-V^{+} + V-\)} \\
\end{array} \]


ii.  \(-C + V-\) junction

'At first I did not realise it.'

\[ \begin{array}{cc}
\text{ilk anda farkanda olmadim.} \\
\end{array} \]

\[ \begin{array}{cc}
\text{[ ilo \ unda ]} & \text{[ ilj kunda ]} \\
\end{array} \]

\[ \begin{array}{c}
\text{\(-C^{+} + W-\)} \\
\end{array} \]

\[ \begin{array}{c}
\text{\(-C_{-}^{+} + V-\)} \\
\end{array} \]

8.2.3.  **r Prosody**

r prosody is set up to mark rounding harmony between
words. When a word with \( r \) prosodic ending is followed by a word
with \( r \) prosodic onset whose second syllable is \( r \) prosodic,
i.e. \( r + r^r \), the junction is \( r \) prosodic. The exponent of \( r \) prosodic
junction is rounding of the first syllable of the following word.

Examples:

i. Dün çarşidan üç kilo elma aldım.

\[
\begin{align*}
\text{Dün çarşidan } & \quad \text{uç kilo elma aldım.} \\
[\gamma^\nu \text{ çil} ] & \quad [\gamma^\nu \text{ çyl} ] \\
^r\text{VC} + ^r\text{CV} - ^r\text{CV} & \quad ^r\text{VC} + ^r\text{CV} - ^r\text{CV}
\end{align*}
\]

'Yesterday I bought three kilogrammes of apples from the market.'

ii. O bavul kimin?

\[
\begin{align*}
\text{O bavul } & \quad \text{kimin?} \\
[\text{ o bavul }] & \quad [\text{ o bavul }] \\
^r\text{V} + ^r\text{CV} - ^r\text{CVC} & \quad ^r\text{V} + ^r\text{CV} - ^r\text{CVC}
\end{align*}
\]

'Whose suitcase is that?'

8.2.4. \( r \) Prosody

\( r \) prosody is set up to mark non-rounding harmony between
words. Where a word with \( r \) prosodic ending, in which the last \( V \) is \( \nu \),
is followed by a word with \( r \) prosodic onset, the junction is
\( r \) prosodic. The exponent of \( r \) prosodic junction is non-rounding of
the final syllable of the preceding word.
Examples:

i. Uzun uzun ne bakıyorsun diye sordum kızdı.

$[\text{sordum} \quad \text{kızdı}]$  

$-\overset{\text{C}}{\text{C}} + \overset{\text{C}}{\text{C}} -$  

'I asked him why he was staring and he got angry.'

ii. Suyu ısıtmak iş değil.

$[\text{suju} \quad \text{ısıtmak} ]$  

$-\overset{\text{C}}{\text{i}} + \overset{\text{C}}{\text{C}} - \text{V}$  

'It is no bother to boil the water.'

8.2.5. I Prosody

I prosody is set up to mark close harmony between words where the inter-word junction is of the following types:

a) $-V_i + (C)V_\alpha -$

Example:

Anadoluyu kariş kariş gezmişlerdir.

$[\text{anadoluyu} \quad \text{kariş} ]$  

$-V_i + CV_\alpha -$  

'They have been I suppose all over Anatolia.'

In this example I prosody is accompanied by $r$ prosody, for which see 8.2.4.
b) \(-V_{\alpha} + (0)V_{\gamma^-}\)

Example:

Kahve ister misin?

\[
\begin{align*}
[ \text{kuxye} & \ \text{istxa} \text{misip} ] \\
- V_{\alpha} + V_{\gamma^-}
\end{align*}
\]

'Do you want coffee?'

The exponent of I prosody is closeness in vowel quality in the syllable with \(\alpha\).

8.2.6. s Prosody

s prosody is set up to mark the junction of \(-C\) final + V initial words, and the exponent of this prosody is syllabification.

Example:

Ye\(^\text{s}\)il iplikle dikersen gorunmez.

\[
\begin{align*}
\text{CV-CVC} & \ + \ \text{VC-CVC-CV} \\
\text{CV-CV-C}+\text{VC-CVC}
\end{align*}
\]

'If you sew with green thread, it won't be seen.'

8.2.7. v Prosody

v prosody is set up to mark voiceless harmony at intra-word or inter-word \(S_{h} + \frac{h_{s}}{S}\) junctions, and the exponent is voicelessness.

Examples:
Inter-word

Hava biraz sıcak ama zarar yok.

[ bugün sıcak ]

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$s^h$</td>
<td>$s$</td>
</tr>
</tbody>
</table>

'The weather is rather hot, but it does not matter.'

Intra-word

Yemekler hep tuzsuz.

[ tuzsuz ]

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CV$^h$</td>
<td>CV</td>
</tr>
</tbody>
</table>

'The meals are all unsalted.'

8.2.8. v Prosody

v prosody is set up to mark voicing harmony at $\text{ph} + V -$
inter-word junctions. There is also syllabification at such junctures.

Examples:

i. Et ve soğan bir kap içinde pişirilir.

[ kap içinde ]

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CV$^h$</td>
<td>V</td>
</tr>
</tbody>
</table>

'Meat and onions are cooked in one saucepan.'

ii. Senin gibi genç adamlar hep asker.

[ genç adamlar ]

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CVCP$^h$</td>
<td>CV</td>
</tr>
</tbody>
</table>

'Young men like you are all soldiers.'
8.2.9. Prosody

Prosody is set up to mark the absence of a phonetic exponent for final \(-C_K\) in the word 'bir' and suffix 'yor' at the types of junction given below:

a) bir

At \(-C_Kr+V-\) or \(-C_Kr-V-\) inter-word junctions.

Example:

\[ \text{Bir is istiyorum ama yok.} \]

\[ \text{[ hi ıʃ ]} \quad \text{[ bi iʃ ]} \]

\[ CVr-K+VC \quad CVr-K+VC \]

'I want a job but there is none.'

b) yor

i. At \(-C_Kr+V-\) or \(-C_Kr-V-\) inter-word junctions.

Example:

\[ \text{Onlar bize geliyor diye biz onlara gidiyoruz.} \]

\[ \text{[ jeleliʃ dije ]} \quad \text{[ jeleliʃ dije ]} \]

\[ CVr-K+C- \quad CVr-K+C- \]

'As they come to(see) us we go to(see) them.'

ii. At \(-C_Kr-V-\) intra-word junctions.

Example:

\[ \text{Her yemekte tatlı yiyorlar.} \]

\[ \text{[ jiʃ]-[liʃ]-[laʃ]-} \quad \text{[ jiʃ]-[liʃ]-[laʃ]-} \]

\[ CV-CVK+CVC \quad CV-CVK+CVC \]

'They have desert at each meal.'
8.2.10. \( \mathcal{X} \) Prosody

\( \mathcal{X} \) prosody is set up to mark the inter-word junction of 
C and V final words + the post-position 'ile', which has the structure 
V-CV. The exponent of \( \mathcal{X} \) prosody is the absence of a phonetic 
exponent for the initial V in V-CV at \(- C + V-CV\) junction, and \([j]\) 
at \(- V + V-CV\) junction. \( \mathcal{X} \) prosody is accompanied by y/w prosodies.

Examples:

i. \(- C + V-CV\)

Hangi kaşak ile taksim ediyorsun?

\[
\begin{array}{c}
\text{[ kaʃa êk i ʃe ] } \\
- C + V-CV \\
\text{[ kaʃa wkha ] } \\
- C + V-CV
\end{array}
\]

'With which spoon are you serving?'

ii. \(- V + V-CV\)

Su kesilince teneke ile çəşmeden taşırız.

\[
\begin{array}{c}
\text{[ tenəce i ʃe ] } \\
- V + V-CV \\
\text{[ tenəcəjle ] } \\
- V + V-CV
\end{array}
\]

'When the water (supply) is cut, we carry (the water) from the 
fountain with tins (large tin containers).'

8.2.11. \( \mathcal{E} \) Prosody

\( \mathcal{E} \) prosody is set up to mark the sameness of articulation 
at the following \(- N + C_{PK}\) inter-word and/or intra-word junctions.
a) \(-\frac{N}{p} + \frac{P}{p}\)  inter-word and intra-word junctions

The exponent of \(=\) prosody at such junctions is sameness of articulation as for \(P\) over both \(N\) and \(P\), i.e. bilabial articulation.

Example:

Bütün bu işlerden o sorumlu.

\([ \hat{h} \dot{y} \dot{y} \dot{p} \text{ bu} ]\) \(\quad [ \hat{h} \dot{y} \dot{y} \dot{y} \dot{p} \text{ bu} ]\)

\(-\frac{N}{p} + \frac{P}{p}\) \(\quad -\frac{N}{p} + \frac{P}{p}\)

'He is responsible for all these things.'

b) \(-\frac{N+K}{n}\) intra-word junctions

The exponent of \(=\) prosody at such junctions is sameness of articulation as for \(K\) over both \(N\) and \(K\), i.e. denti-alveolar nasal articulation.

Example:

Daha ben canlı timsah gördüm.

\([ \dot{d} \text{yan} \dot{k} \text{y} ]\) \(\quad [ \dot{d} \text{a} \text{nn} \dot{y} ]\)

\(-\frac{N+K}{n}\) \(\quad -\frac{N}{n} + \frac{K}{n}\)

'I have not yet seen a live crocodile.'
APPENDIX I
APPENDIX I

Instrumental Findings

I. In the preparation of the instrumental findings included in this thesis the following technique and instruments were used:

i. Palatography

ii. Sonagraph (sound spectograph)

iii. Mingograph

I.1. Palatography

The technique of palatography, its types, their range of application and the necessary terminological explanations have been fully described in the following articles:


It is not therefore necessary to describe palatography here. Direct palatography was not used as the above method was found to be adequate.

I.1.1. Discussion on the Palatograms

Eighteen word palatograms have been included in this thesis which provide instrumental evidence for the description of front versus back articulation of some of the consonants. A transparent palatogram figure has been provided and kept in the inside of the back cover with the help of which each palatogram
can be studied and compared with others. The black areas show where contact was made during the articulation of the words. Zones are named as illustrated in Table I in Firth's article 'Word Palatograms and Articulation'.

1. [ ɕc ] ek  
   In [ ɕc ] there is wide contact for [ɕ] extending from the back to 3rd molar line, and left and right to the canine line. By contrast in [uk] there is very little contact for [k]: there is a thin wipe across the palate behind the 4th molar line and a partial wipe in the left and right post-palatal zone.

2. [ verbs ] ak

3. [ ʃs ] ʉs  
   In [ ʃs ] the contact is wider than in [ us ] both left and right, and in [ ʃs ] the contact extends to the incisor line on the left and to the lateral incisor line on the right. In [us] the contact does not reach the incisor line on the left, and does not reach beyond the right alveolar zone.

4. [ ʃs ] us

5. [ æʃ ] eʃ  
   In [ æʃ ] the contact extends beyond the canine line halfway into the alveolar zone. In [ æʃ ] the contact just reaches the canine line in the right post-alveolar zone.

6. [ æʃ ] aʃ

7. [ iz ] iz  
   The contact is wider in [ iz ] in contrast to [ yz ].

8. [ yz ] az

   In both the contact is wide in the left alveolar zone, but in [ iz ] in the left and right post-alveolar zone.
9. [əɣ] er
   In [əɣ] a narrow contact extends towards the canine line into the left and right post-alveolar zone, and there is also a slight contact in the left zone of the post-alveolar zone.

10. [æ] ar

11. [ɛɾɛs] bɛɾɛ
   In [ɛɾɛs] a narrow contact extends beyond the canine line and half-way into the alveolar zone. In [uɾa] the contact extends to just beyond the 1st molar line into the left and right post-alveolar zone. Compared to [əɣ] and [æ] the contact in [ɛɾɛs] and [uɾa] is firmer due to the repeated striking action of the tongue.

12. [uɾa] ara

13. [ɛʃ] el
   In [ɛʃ] the contact extends from beyond the 4th molar line on the left and on the right to just beyond the incisor line, and into the left and right zones of the post-alveolar zone, and also a soft contact can be seen in the left and right zones of the dental and denti-alveolar zone. In [æʃ] there is almost no contact beyond the 2nd molar line. The contact starts half-way in the left and right prepalatal zones, and extends to the incisor line, covering left and right zones of the dental and denti-alveolar zones.

14. [æʃ] al

15. [ɛɲ] en
   In [ɛɲ] the contact is wider than in [ɛn], and extends from the incisor line to beyond the 4th molar line, on the left and on the right, and also from the left and right zones of the dental zone partially into left zone of the pre-palatal zone, and half-way into the right zone of the post-alveolar zone.

16. [ɛn] an
In [ ūn ] the contact extends to just beyond the 3rd molar line into left and right post-palatal zones, and only very slightly into the left zone of the post-alveolar zone.

17. [ ëŋɬ ] genq 18. [ dũns ] dans

Unlike [ dũns ], in [ ëŋɬ ] there is contact in the left and right post-palatal zones which extends slightly into the left zone of the mid-palatal zone, though the contact there is not so firm. Contact is also wider in all other places in the articulation of [ ëŋɬ ] compared to [ dũns ], except for a small area in the left and right zones of the dental and denti-alveolar zones. The same area shows a firm wipe in [ dũns ] as there is dental contact for [ d ].

1.2. Sonagraph (sound spectrograph)

This is an electro-mechanical device for displaying energy content over the sound spectrum between 85 to 8000 Hz.

A sheet of chemically treated paper is mounted on a rotating drum which is, in turn, keyed to an oxide coated disc so that they rotate together. Sound is recorded on the edge of this disc in much the same way as on the tape of a tape recorder. This recorded sound is then fed through the electronics of the machine in a series of constant repetitions — rather like a tape loop — and a burning stylus is made to travel upwards across the paper on the drum, by a lead screw, so that each revolution of the drum finds the stylus one thread on the lead screw higher on the paper. As a varying D.C. voltage dependent in intensity on the energy content of the example is fed to this stylus, a burning of the paper takes place where there is energy, the blank portions cont.
representing no energy. Frequency is displayed in the vertical plane, duration in the horizontal, and the varying intensity of the burnt trace – in terms of light and dark – the energy content. Frequency and duration can be measured with the aid of a transparent calibration grid.

1.2.1. Discussion on the Spectrograms

Eleven spectrograms are included in this thesis for the discussion of voice, voicelessness and devoicing (i.e. h/h) features. The presence of regular wave forms on the voice bar at the lower end of the frequency scale suggests voicing, and the absence of regular wave forms on the voice bar indicates voicelessness. Where the regular wave forms show a fading away at the end of various utterances, this suggests devoicing.

No regular wave forms are traced in Specs. 2, 3, 4, 6 at places corresponding to [ p ] in 2, [ q ] and [ y ] in 3, [ x ] in 4, and [ k ] in 6, which support the description of these sounds as voiceless.

The regular wave forms on the voice bar, at places corresponding to [ z ] in 1, [ m ] in 4, [ j ] in 5, [ x ] in 6, and [ k ] in 7 tend to fade away towards the end of the utterance. This shows that there is some devoicing in the articulation of these consonants in final positions.

Spectograms 8 and 10 show that though the words sap and dip have been analysed as h ending and h ending respectively, i.e. $P^h_P$ and $P^h_P$, they are phonetically the same, i.e. both voiceless, in final position.
Spec. 9 \( \text{[sup]x} \) shows that the exponent of \( -\frac{r^h}{p} \) is still voiceless when followed by a vowel, but Spec. 11 \( \text{[dib]} \) shows that the exponent of \( -\frac{r^h}{p} \) is voiced when followed by a vowel.

In Spec. 6 at the place corresponding to \( [x] \), there is evidence of high intensity high in the frequency spectrum and this suggests there is friction at this point.

As mentioned earlier, in Spec. 5 \( \text{[xuj]} \) the stretch on the voice bar at the place corresponding to \( [x] \) looks like voicing, but this seems to be due to breathy onset + close lip rounding rather than voicing.

1.3. Minigraph

The minigraph is a writing machine to which the electro-aerometer described below is connected. It provides a moving graphed paper, over which is mounted a number of ink galvanometers. These are thin glass jets suspended in the magnetic field of the galvanometer so that fluctuations of this field, influenced by the energy content of the utterance, cause these jets to pivot in an arc, about a mean zero line. Ink is forced through these jets under high pressure and this results in a stream of ink being deposited on the moving paper, writing the information contained in the utterance for immediate visual interpretation.

The Electro-Aerometer (marked by N and M on the traces)

The instrument allows the display of volumes of air from the nose and mouth simultaneously. It consists of a face mask,

---

1 See 2.5.1.6.
which covers the front of the face completely, a foam rubber rim sealing the face from leakage of air, and a rubber seal to isolate the nose and mouth into two separate channels. The expelled air passes through rubber valves which, dependent on the volume, open up progressively to allow a beam of light from a lamp fitted on each individual valve to react on a photo electric cell. The degree of light intensity is converted by the electronics of the device into varying D.C. currents, which actuate the mingograph to produce peaks and curves of varying height, the higher peaks showing more air content. Voicing and nasality are superimposed on the trace, so that segmenting is relatively simple.

I.3.1. Discussion on Mingograms

Six mingograms are included in this thesis to show the contexts where vowels are nasalized.

Transcriptions have been given on the mingograms indicating places corresponding to each sound. Thus it can be observed that nasal tracing has registered nasality at places corresponding to vowel articulations marked with [\(^\text{n}\)] which confirm the perceptual description of such vowels as nasalized, i.e. that a vowel is nasalized where it is initial and followed by a nasal, or where it occurs between two nasals, or precedes a nasal which is followed by a stop, or a sibilant, or [\(\text{j}\)].

In Mingo. 5 [c\(\text{j}\)je] there is no reduced amplitude on the larynx tracing to correspond to the articulation of a nasal consonant, which indicates lack of contact for the nasal as described in 2.3.
7. [bat]

8. [sep]
11. [djiṭi]
1. α
2. xenum
3. ηγγγ

50 Hz.
APPENDIX II
### A Group Vowels

<table>
<thead>
<tr>
<th>çay</th>
<th>[ çaːj ]</th>
<th>tea</th>
</tr>
</thead>
<tbody>
<tr>
<td>şaq</td>
<td>[ şaːʃ ]</td>
<td>be amazed</td>
</tr>
<tr>
<td>yaq</td>
<td>[ jaːʃ ]</td>
<td>wet</td>
</tr>
<tr>
<td>yay</td>
<td>[ jaːj ]</td>
<td>spread</td>
</tr>
<tr>
<td>aç</td>
<td>[ aːç ]</td>
<td>open</td>
</tr>
<tr>
<td>aş</td>
<td>[ aʃ ]</td>
<td>food</td>
</tr>
<tr>
<td>ay</td>
<td>[ aʃ ]</td>
<td>month</td>
</tr>
<tr>
<td>baq</td>
<td>[ baːʃ ]</td>
<td>head</td>
</tr>
<tr>
<td>bay</td>
<td>[ baʃ ]</td>
<td>mister</td>
</tr>
<tr>
<td>çay</td>
<td>[ çaːj ]</td>
<td>change one's mind</td>
</tr>
<tr>
<td>cam</td>
<td>[ caːm ]</td>
<td>glass</td>
</tr>
<tr>
<td>can</td>
<td>[ caːn ]</td>
<td>life</td>
</tr>
<tr>
<td>çag</td>
<td>[ çaːg ]</td>
<td>era</td>
</tr>
<tr>
<td>çak</td>
<td>[ çaːk ]</td>
<td>strike</td>
</tr>
<tr>
<td>çal</td>
<td>[ çaːl ]</td>
<td>steal</td>
</tr>
<tr>
<td>çam</td>
<td>[ çaːm ]</td>
<td>pine tree</td>
</tr>
<tr>
<td>çan</td>
<td>[ çaːn ]</td>
<td>bell</td>
</tr>
<tr>
<td>çap</td>
<td>[ çaːp ]</td>
<td>diameter</td>
</tr>
<tr>
<td>çarp</td>
<td>[ çaːp ]</td>
<td>beat</td>
</tr>
<tr>
<td>çat</td>
<td>[ çaːt ]</td>
<td>be angry at</td>
</tr>
<tr>
<td>haq</td>
<td>[ xaːq ]</td>
<td>cross</td>
</tr>
<tr>
<td>kaq</td>
<td>[ kaːq ]</td>
<td>how many</td>
</tr>
<tr>
<td>kaq</td>
<td>[ kaːʃ ]</td>
<td>eyebrow</td>
</tr>
<tr>
<td>kay</td>
<td>[ kaːʃ ]</td>
<td>slide</td>
</tr>
<tr>
<td>maq</td>
<td>[ maːq ]</td>
<td>match</td>
</tr>
<tr>
<td>pay</td>
<td>[ paːj ]</td>
<td>share</td>
</tr>
<tr>
<td>ray</td>
<td>[ raːj ]</td>
<td>rail</td>
</tr>
<tr>
<td>saq</td>
<td>[ saːʃ ]</td>
<td>hair</td>
</tr>
</tbody>
</table>

### cont. next column

<table>
<thead>
<tr>
<th>say</th>
<th>[ sæj ]</th>
<th>count</th>
</tr>
</thead>
<tbody>
<tr>
<td>şan</td>
<td>[ şan ]</td>
<td>fame</td>
</tr>
<tr>
<td>şans</td>
<td>[ şans ]</td>
<td>luck</td>
</tr>
<tr>
<td>şap</td>
<td>[ şap ]</td>
<td></td>
</tr>
<tr>
<td>şart</td>
<td>[ şart ]</td>
<td>condition</td>
</tr>
<tr>
<td>taq</td>
<td>[ taːq ]</td>
<td>crown</td>
</tr>
<tr>
<td>taq</td>
<td>[ taːq ]</td>
<td>stone</td>
</tr>
<tr>
<td>tay</td>
<td>[ taj ]</td>
<td>pony</td>
</tr>
<tr>
<td>yağ</td>
<td>[ jaːɡ ]</td>
<td>butter</td>
</tr>
<tr>
<td>yak</td>
<td>[ jək ]</td>
<td>burn</td>
</tr>
<tr>
<td>yan</td>
<td>[ jaːn ]</td>
<td>get burned</td>
</tr>
<tr>
<td>yap</td>
<td>[ jaːp ]</td>
<td>make</td>
</tr>
<tr>
<td>yar</td>
<td>[ jər ]</td>
<td>cliff</td>
</tr>
<tr>
<td>yas</td>
<td>[ jəs ]</td>
<td>mourning</td>
</tr>
<tr>
<td>yat</td>
<td>[ jət ]</td>
<td>lie down</td>
</tr>
<tr>
<td>yaz</td>
<td>[ jəz ]</td>
<td>summer</td>
</tr>
</tbody>
</table>

| ar           | [ ær ]   | honour                 |
| bar          | [ bæɾ ]  | drinking               |
| dar          | [ dæɾ ]  | narrow                 |
| far          | [ fær ]  | head light             |
| fark         | [ fɛɾk ] | difference             |
| harç         | [ xarç ] | trimmings              |
| kar          | [ kær ]  | snow                   |
| kart         | [ kæɾt ] | over ripe              |
| nar          | [ næɾ ]  | pomegranate            |
| sark         | [ sɛɾk ] | lean out               |
| sar          | [ saɾ ]  | wrap up                |
| tart         | [ tæɾt ] | weigh                  |
| var          | [ væɾ ]  | arrive                 |
| zar          | [ zæɾ ]  | dice                   |

*cont. next column*
<table>
<thead>
<tr>
<th>Zârf</th>
<th>[ zârf ]</th>
<th>Envelope</th>
</tr>
</thead>
<tbody>
<tr>
<td>ak</td>
<td>[ āk ]</td>
<td>white</td>
</tr>
<tr>
<td>an</td>
<td>[ ān ]</td>
<td>moment</td>
</tr>
<tr>
<td>at</td>
<td>[ āt ]</td>
<td>horse</td>
</tr>
<tr>
<td>bak</td>
<td>[ bâk ]</td>
<td>look</td>
</tr>
<tr>
<td>ban</td>
<td>[ bân ]</td>
<td>dip</td>
</tr>
<tr>
<td>bat</td>
<td>[ bât ]</td>
<td>sink</td>
</tr>
<tr>
<td>dam</td>
<td>[ dâm ]</td>
<td>roof</td>
</tr>
<tr>
<td>dans</td>
<td>[ dâns ]</td>
<td>dance</td>
</tr>
<tr>
<td>ham</td>
<td>[ xam ]</td>
<td>unripe</td>
</tr>
<tr>
<td>han</td>
<td>[ xân ]</td>
<td>inn</td>
</tr>
<tr>
<td>hap</td>
<td>[ xup ]</td>
<td>pill</td>
</tr>
<tr>
<td>hat</td>
<td>[ xut ]</td>
<td>line</td>
</tr>
<tr>
<td>kan</td>
<td>[ kun ]</td>
<td>blood</td>
</tr>
<tr>
<td>kap</td>
<td>[ kâp ]</td>
<td>snatch</td>
</tr>
<tr>
<td>kat</td>
<td>[ kut ]</td>
<td>layer</td>
</tr>
<tr>
<td>mat</td>
<td>[ mut ]</td>
<td>dull</td>
</tr>
<tr>
<td>pak</td>
<td>[ pûk ]</td>
<td>clean</td>
</tr>
<tr>
<td>san</td>
<td>[ sâm ]</td>
<td>suppose</td>
</tr>
<tr>
<td>sap</td>
<td>[ sup ]</td>
<td>stem</td>
</tr>
<tr>
<td>sat</td>
<td>[ sût ]</td>
<td>sell</td>
</tr>
<tr>
<td>tak</td>
<td>[ tâk ]</td>
<td>put on</td>
</tr>
<tr>
<td>tam</td>
<td>[ tâm ]</td>
<td>exact</td>
</tr>
<tr>
<td>tan</td>
<td>[ tân ]</td>
<td>dawn</td>
</tr>
<tr>
<td>tap</td>
<td>[ tûp ]</td>
<td>worship</td>
</tr>
<tr>
<td>tat</td>
<td>[ tût ]</td>
<td>taste</td>
</tr>
<tr>
<td>vat</td>
<td>[ vût ]</td>
<td>voltage</td>
</tr>
<tr>
<td>zam</td>
<td>[ zâm ]</td>
<td>increase</td>
</tr>
<tr>
<td>zamk</td>
<td>[ zûmk ]</td>
<td>glue</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Af</th>
<th>[ yf ]</th>
<th>Forgiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>as</td>
<td>[ yâs ]</td>
<td>hang</td>
</tr>
<tr>
<td>az</td>
<td>[ yûz ]</td>
<td>little</td>
</tr>
<tr>
<td>av</td>
<td>[ yuv ]</td>
<td>prey</td>
</tr>
<tr>
<td>bas</td>
<td>[ yûs ]</td>
<td>step on</td>
</tr>
<tr>
<td>has</td>
<td>[ xûs ]</td>
<td>real</td>
</tr>
<tr>
<td>gaz</td>
<td>[ gûz ]</td>
<td>gas</td>
</tr>
<tr>
<td>kav</td>
<td>[ kûv ]</td>
<td>tinder</td>
</tr>
<tr>
<td>kas</td>
<td>[ kûs ]</td>
<td>muscle</td>
</tr>
<tr>
<td>kaz</td>
<td>[ kyz ]</td>
<td>goose</td>
</tr>
<tr>
<td>naz</td>
<td>[ nûz ]</td>
<td>coyness</td>
</tr>
<tr>
<td>pas</td>
<td>[ pys ]</td>
<td>rust</td>
</tr>
<tr>
<td>raf</td>
<td>[ xûf ]</td>
<td>shelf</td>
</tr>
<tr>
<td>saf</td>
<td>[ syf ]</td>
<td>pure</td>
</tr>
<tr>
<td>sav</td>
<td>[ syv ]</td>
<td>send away</td>
</tr>
<tr>
<td>saz</td>
<td>[ syz ]</td>
<td>reed</td>
</tr>
<tr>
<td>tas</td>
<td>[ tys ]</td>
<td>bowl</td>
</tr>
<tr>
<td>tav</td>
<td>[ tyv ]</td>
<td>fatness</td>
</tr>
</tbody>
</table>

| Ağ    | [ â: ] | net        |
| al    | [ âk ] | take       |
| alt   | [ âkt ]| bottom     |
| bag   | [ ba: ]| vineyard   |
| bal   | [ ba: ]| honey      |
| dag   | [ da: ]| mountain   |
| dal   | [ da: ]| branch     |
| fal   | [ fâl ]| fortune    |
| halk  | [ xâlk ]| people     |
| kal   | [ ka: ]| stay       |
| kalk  | [ ka: ]| get up     |
| kalp  | [ ka: ]| fake       |
| nal   | [ na: ]| horse shoe |
| mal   | [ ma: ]| property   |
| sağ   | [ sa: ]| alive      |
| sal   | [ sa: ]| raft       |

Cont. next column
<table>
<thead>
<tr>
<th>Vowel</th>
<th>Sound</th>
<th>Word</th>
<th>Vowel</th>
<th>Sound</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>çel</td>
<td>[ ɛəl ]</td>
<td>attract</td>
<td>bel</td>
<td>[ ɐɛl ]</td>
<td>waist</td>
</tr>
<tr>
<td>del</td>
<td>[ ɛəl ]</td>
<td>drill</td>
<td>bes</td>
<td>[ ɐɛʃ ]</td>
<td>five</td>
</tr>
<tr>
<td>gel</td>
<td>[ ɛəl ]</td>
<td>come</td>
<td>bey</td>
<td>[ ɐɛʃ ]</td>
<td>gentleman</td>
</tr>
<tr>
<td>kel</td>
<td>[ ɛəl ]</td>
<td>bald</td>
<td>de</td>
<td>[ ɛə ]</td>
<td>say</td>
</tr>
<tr>
<td>sel</td>
<td>[ ɛəl ]</td>
<td>flood</td>
<td>deg</td>
<td>[ ɛə ]</td>
<td>touch</td>
</tr>
<tr>
<td>tel</td>
<td>[ ʃəl ]</td>
<td>wire</td>
<td>deg</td>
<td>[ ɛəʃ ]</td>
<td>pierce</td>
</tr>
<tr>
<td>yel</td>
<td>[ ʃəl ]</td>
<td>wind</td>
<td>eg</td>
<td>[ ɛː ]</td>
<td>bend</td>
</tr>
<tr>
<td>ders</td>
<td>[ ɛəɡə ]</td>
<td>lesson</td>
<td>el</td>
<td>[ ɛl ]</td>
<td>hand</td>
</tr>
<tr>
<td>dert</td>
<td>[ ɛəɡə ]</td>
<td>sorrow</td>
<td>em</td>
<td>[ ɛm ]</td>
<td>suck</td>
</tr>
<tr>
<td>er</td>
<td>[ əɹ ]</td>
<td>soldier</td>
<td>en</td>
<td>[ ən ]</td>
<td>width</td>
</tr>
<tr>
<td>fer</td>
<td>[ ʃəɹ ]</td>
<td>lustre</td>
<td>eq</td>
<td>[ ɛʃ ]</td>
<td>equal</td>
</tr>
<tr>
<td>ger</td>
<td>[ ʃəɹ ]</td>
<td>stretch</td>
<td>geç</td>
<td>[ ʒəʃ ]</td>
<td>late</td>
</tr>
<tr>
<td>her</td>
<td>[ ɾəɹ ]</td>
<td>each</td>
<td>leq</td>
<td>[ ɫəʃ ]</td>
<td>carcass</td>
</tr>
<tr>
<td>ser</td>
<td>[ ʃəɾ ]</td>
<td>spread</td>
<td>ne</td>
<td>[ nə ]</td>
<td>what</td>
</tr>
<tr>
<td>sert</td>
<td>[ ʃəɾ ]</td>
<td>hard</td>
<td>nem</td>
<td>[ nəm ]</td>
<td>humidity</td>
</tr>
<tr>
<td>ter</td>
<td>[ ɾəɾ ]</td>
<td>sweat</td>
<td>rey</td>
<td>[ ɾəʃ ]</td>
<td>vote</td>
</tr>
<tr>
<td>ver</td>
<td>[ ɾəɾ ]</td>
<td>give</td>
<td>seq</td>
<td>[ ɾəʃ ]</td>
<td>choose</td>
</tr>
<tr>
<td>yer</td>
<td>[ ɾəɾ ]</td>
<td>place</td>
<td>çey</td>
<td>[ ʃəɾ ]</td>
<td>thing</td>
</tr>
<tr>
<td>ben</td>
<td>[ ɾən ]</td>
<td>I</td>
<td>ve</td>
<td>[ və ]</td>
<td>and</td>
</tr>
<tr>
<td>denk</td>
<td>[ ɾəŋk ]</td>
<td>bundle</td>
<td>ye</td>
<td>[ jə ]</td>
<td>eat</td>
</tr>
<tr>
<td>gem</td>
<td>[ ɾəm ]</td>
<td>bridle</td>
<td>et</td>
<td>[ ɛt ]</td>
<td>meat</td>
</tr>
<tr>
<td>genç</td>
<td>[ ɾəɾʃ ]</td>
<td>young</td>
<td>es</td>
<td>[ ɛʃ ]</td>
<td>blow</td>
</tr>
<tr>
<td>hem</td>
<td>[ ɾəm ]</td>
<td>also</td>
<td>ez</td>
<td>[ ɛz ]</td>
<td>crush</td>
</tr>
<tr>
<td>renk</td>
<td>[ ɾəŋk ]</td>
<td>colour</td>
<td>ev</td>
<td>[ əv ]</td>
<td>house</td>
</tr>
<tr>
<td>sen</td>
<td>[ ɾən ]</td>
<td>you</td>
<td>bez</td>
<td>[ ʰəɾz ]</td>
<td>cloth</td>
</tr>
<tr>
<td>sen</td>
<td>[ ʃəɾn ]</td>
<td>merry</td>
<td>cep</td>
<td>[ ɾəʃp ]</td>
<td>pocket</td>
</tr>
<tr>
<td>ten</td>
<td>[ ɾəɾn ]</td>
<td>complexion</td>
<td>dev</td>
<td>[ ɾəɾv ]</td>
<td>monster</td>
</tr>
<tr>
<td>yem</td>
<td>[ ɾəɾm ]</td>
<td>animal feed</td>
<td>gez</td>
<td>[ ɾəɾz ]</td>
<td>wander</td>
</tr>
<tr>
<td>yen</td>
<td>[ ɾəɾn ]</td>
<td>win</td>
<td>hep</td>
<td>[ ɾəɾp ]</td>
<td>always</td>
</tr>
<tr>
<td>Word</td>
<td>Pronunciation</td>
<td>Meaning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>--------------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kes</td>
<td>[ keʃ ]</td>
<td>cut</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pes</td>
<td>[ ʃeʃ ]</td>
<td>low</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ses</td>
<td>[ ʃeʃ ]</td>
<td>voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>set</td>
<td>[ ʃeʃ ]</td>
<td>barrier</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sev</td>
<td>[ ʃeʒ ]</td>
<td>like</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sez</td>
<td>[ ʃez ]</td>
<td>feel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>şef</td>
<td>[ ʃef ]</td>
<td>chief</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>şevk</td>
<td>[ ʃeyk ]</td>
<td>encouragement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tef</td>
<td>[ ʃef ]</td>
<td>tambourine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tep</td>
<td>[ ʃep ]</td>
<td>kick</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tez</td>
<td>[ ʃez ]</td>
<td>quick</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>şevk</td>
<td>[ ʃeyk ]</td>
<td>pleasure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ek</td>
<td>[ ʃeʃ ]</td>
<td>addition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>çek</td>
<td>[ ʃeʃ ]</td>
<td>pull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kök</td>
<td>[ ʃeʃ ]</td>
<td>cake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pek</td>
<td>[ ʃeʃ ]</td>
<td>very</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sek</td>
<td>[ ʃeʃ ]</td>
<td>plain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tek</td>
<td>[ ʃeʃ ]</td>
<td>only</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### I Group Vowels

<table>
<thead>
<tr>
<th>çığ</th>
<th>[ Dragging]</th>
<th>avalanche</th>
<th>hiz</th>
<th>[ xuz ]</th>
<th>speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>dias</td>
<td>[ diʃ ̂ ]</td>
<td>outside</td>
<td>kiz</td>
<td>[ kɯs ]</td>
<td>reduce</td>
</tr>
<tr>
<td>kil</td>
<td>[ kʃ̂ ]</td>
<td>back</td>
<td>kiz</td>
<td>[ kɯz ]</td>
<td>girl</td>
</tr>
<tr>
<td>kış</td>
<td>[ kʃʃ ]</td>
<td>hair</td>
<td>siz</td>
<td>[ suz ]</td>
<td>leak</td>
</tr>
<tr>
<td>kış</td>
<td>[ kʃʃ ]</td>
<td>winter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kıy</td>
<td>[ kʃj ]</td>
<td>sacrifice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>siğ</td>
<td>[ sˤː ]</td>
<td>shallow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tiğ</td>
<td>[ tˤː ]</td>
<td>crochet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yiğ</td>
<td>[ jˤː ]</td>
<td>pile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yil</td>
<td>[ jʃː ]</td>
<td>year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>buk</td>
<td>[ buk ]</td>
<td>be fed up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>çık</td>
<td>[ Dragging]</td>
<td>go out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hirs</td>
<td>[ xɯx ]</td>
<td>ambition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hırt</td>
<td>[ xɯt ]</td>
<td>uncooked</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kin</td>
<td>[ kɯn ]</td>
<td>cover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kir</td>
<td>[ kɯɾ ]</td>
<td>break</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kırp</td>
<td>[ kɯɾp ]</td>
<td>shear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mih</td>
<td>[ mɯx ]</td>
<td>nail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sak</td>
<td>[ sɯk ]</td>
<td>squeeze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sir</td>
<td>[ sɯɾ ]</td>
<td>secret</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>şık</td>
<td>[ ʃuk ]</td>
<td>elegant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tip</td>
<td>[ tɯp ]</td>
<td>medicine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yık</td>
<td>[ jɯk ]</td>
<td>demolish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yırt</td>
<td>[ jɯɾt ]</td>
<td>tear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>zit</td>
<td>[ zɯt ]</td>
<td>opposite</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### i Group Vowels

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>biq</td>
<td>[biːk]</td>
<td>cut</td>
</tr>
<tr>
<td>bil</td>
<td>[biːl]</td>
<td>know</td>
</tr>
<tr>
<td>çil</td>
<td>[çiːl]</td>
<td>freckle</td>
</tr>
<tr>
<td>dil</td>
<td>[dil]</td>
<td>tongue</td>
</tr>
<tr>
<td>diq</td>
<td>[diːk]</td>
<td>tooth</td>
</tr>
<tr>
<td>fil</td>
<td>[fiːl]</td>
<td>elephant</td>
</tr>
<tr>
<td>fiq</td>
<td>[fiːk]</td>
<td>chit</td>
</tr>
<tr>
<td>hiq</td>
<td>[çiːq]</td>
<td>none</td>
</tr>
<tr>
<td>iq</td>
<td>[iːq]</td>
<td>drink</td>
</tr>
<tr>
<td>il</td>
<td>[iːl]</td>
<td>city</td>
</tr>
<tr>
<td>iṣq</td>
<td>[iːstʃ]</td>
<td>work</td>
</tr>
<tr>
<td>kil</td>
<td>[ciːl]</td>
<td>earth</td>
</tr>
<tr>
<td>mil</td>
<td>[miːl]</td>
<td>mile</td>
</tr>
<tr>
<td>piq</td>
<td>[piːq]</td>
<td>illegitimate</td>
</tr>
<tr>
<td>pil</td>
<td>[piːl]</td>
<td>battery</td>
</tr>
<tr>
<td>pisq</td>
<td>[piːstʃ]</td>
<td>cook</td>
</tr>
<tr>
<td>sil</td>
<td>[siːl]</td>
<td>wipe</td>
</tr>
<tr>
<td>siq</td>
<td>[ʃiːq]</td>
<td>skewer</td>
</tr>
<tr>
<td>zil</td>
<td>[ziːl]</td>
<td>bell</td>
</tr>
<tr>
<td>bin</td>
<td>[biːn]</td>
<td>ride</td>
</tr>
<tr>
<td>bir</td>
<td>[biːɾ]</td>
<td>one</td>
</tr>
<tr>
<td>bit</td>
<td>[biːt]</td>
<td>louse</td>
</tr>
<tr>
<td>cin</td>
<td>[çiːn]</td>
<td>fairy</td>
</tr>
<tr>
<td>çiq</td>
<td>[çiːq]</td>
<td>raw</td>
</tr>
<tr>
<td>çim</td>
<td>[çiːm]</td>
<td>grass</td>
</tr>
<tr>
<td>qit</td>
<td>[çiːt]</td>
<td>fence</td>
</tr>
<tr>
<td>din</td>
<td>[diːn]</td>
<td>religion</td>
</tr>
<tr>
<td>dip</td>
<td>[diːp]</td>
<td>bottom</td>
</tr>
<tr>
<td>gir</td>
<td>[giɾ]</td>
<td>enter</td>
</tr>
<tr>
<td>giy</td>
<td>[giː]</td>
<td>wear</td>
</tr>
<tr>
<td>in</td>
<td>[iːn]</td>
<td>den</td>
</tr>
<tr>
<td>ip</td>
<td>[iːp]</td>
<td>rope</td>
</tr>
<tr>
<td>it</td>
<td>[iːt]</td>
<td>push</td>
</tr>
<tr>
<td>kim</td>
<td>[ciːm]</td>
<td>who</td>
</tr>
<tr>
<td>kin</td>
<td>[ciːn]</td>
<td>hatred</td>
</tr>
<tr>
<td>kip</td>
<td>[ciːp]</td>
<td>mood</td>
</tr>
<tr>
<td>kir</td>
<td>[ciːɾ]</td>
<td>dirt</td>
</tr>
<tr>
<td>lif</td>
<td>[liːf]</td>
<td>tendon</td>
</tr>
<tr>
<td>sim</td>
<td>[siːm]</td>
<td>gold thread</td>
</tr>
<tr>
<td>sin</td>
<td>[siːn]</td>
<td>hide</td>
</tr>
<tr>
<td>sirk</td>
<td>[siɾk]</td>
<td>circus</td>
</tr>
<tr>
<td>tik</td>
<td>[tiːk]</td>
<td>tic</td>
</tr>
<tr>
<td>tin</td>
<td>[tiːɾ]</td>
<td>intelligence</td>
</tr>
<tr>
<td>tip</td>
<td>[tiːp]</td>
<td>type</td>
</tr>
<tr>
<td>zift</td>
<td>[ziːft]</td>
<td>tar</td>
</tr>
<tr>
<td>biz</td>
<td>[biːz]</td>
<td>we</td>
</tr>
<tr>
<td>çiz</td>
<td>[çiːz]</td>
<td>draw</td>
</tr>
<tr>
<td>dik</td>
<td>[diːk]</td>
<td>steep</td>
</tr>
<tr>
<td>diz</td>
<td>[diːz]</td>
<td>knee</td>
</tr>
<tr>
<td>his</td>
<td>[çiːɾ]</td>
<td>feeling</td>
</tr>
<tr>
<td>is</td>
<td>[iːɾ]</td>
<td>smoky</td>
</tr>
</tbody>
</table>

cont.
<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>iz</td>
<td>[iːz]</td>
<td>trail</td>
</tr>
<tr>
<td>mis</td>
<td>[mɪs]</td>
<td>clean</td>
</tr>
<tr>
<td>pis</td>
<td>[piːs]</td>
<td>dirty</td>
</tr>
<tr>
<td>risk</td>
<td>[riːsk]</td>
<td>danger</td>
</tr>
<tr>
<td>sis</td>
<td>[siːs]</td>
<td>fog</td>
</tr>
<tr>
<td>siz</td>
<td>[siːz]</td>
<td>you</td>
</tr>
<tr>
<td>tiz</td>
<td>[tɪz]</td>
<td>shrill</td>
</tr>
<tr>
<td>boğ  [ bɔː ] strangle</td>
<td>kok  [ kɔk ] smell</td>
<td></td>
</tr>
<tr>
<td>doğ  [ dɔː ] be born</td>
<td>kon  [ kɔn ] perch</td>
<td></td>
</tr>
<tr>
<td>o    [ ɔ ] it</td>
<td>kop  [ kɔp ] be separated</td>
<td></td>
</tr>
<tr>
<td>bol  [ bɔl ] lose</td>
<td>kor  [ kɔr ] fire</td>
<td></td>
</tr>
<tr>
<td>boq  [ bɔː ] empty</td>
<td>kov  [ kɔw ] send away</td>
<td></td>
</tr>
<tr>
<td>boy  [ bɔː ] length</td>
<td>mor  [ mɔr ] purple</td>
<td></td>
</tr>
<tr>
<td>coq  [ ɾɔː ] be merry</td>
<td>ok.  [ ɔk ] arrow</td>
<td></td>
</tr>
<tr>
<td>dol  [ dɔl ] fill</td>
<td>on   [ ɔn ] ten</td>
<td></td>
</tr>
<tr>
<td>doy  [ ɾɔj ] be full up</td>
<td>ot   [ ɔt ] grass</td>
<td></td>
</tr>
<tr>
<td>hoq  [ xɔʃ ] pleasant</td>
<td>ov   [ ɔv ] rub</td>
<td></td>
</tr>
<tr>
<td>koq  [ kɔq ] ram</td>
<td>sof  [ sɔf ] lining</td>
<td></td>
</tr>
<tr>
<td>kol  [ kɔl ] arm</td>
<td>sok  [ sɔk ] put into</td>
<td></td>
</tr>
<tr>
<td>koq  [ kɔʃ ] run</td>
<td>som  [ sɔm ] pure</td>
<td></td>
</tr>
<tr>
<td>koy  [ kɔj ] put</td>
<td>son  [ sɔn ] last</td>
<td></td>
</tr>
<tr>
<td>ol  [ ɔl ] be</td>
<td>sor  [ sɔr ] ask</td>
<td></td>
</tr>
<tr>
<td>oy  [ ɔj ] vote</td>
<td>som  [ sɔm ] bad</td>
<td></td>
</tr>
<tr>
<td>sol  [ sɔl ] left</td>
<td>tok  [ tɔk ] full up</td>
<td></td>
</tr>
<tr>
<td>soy  [ sɔj ] peel</td>
<td>ton  [ tɔn ] ton</td>
<td></td>
</tr>
<tr>
<td>toy  [ tɔj ] inexperienced</td>
<td>top  [ tɔp ] ball</td>
<td></td>
</tr>
<tr>
<td>yol  [ jɔl ] road</td>
<td>yok  [ jɔk ] absent</td>
<td></td>
</tr>
<tr>
<td>bot  [ bɔt ] small boat</td>
<td>yont [ jɔnt ] chip</td>
<td></td>
</tr>
<tr>
<td>cop  [ dɔp ] truncheon</td>
<td>yor  [ jɔr ] tire out</td>
<td></td>
</tr>
<tr>
<td>çok  [ çɔk ] very</td>
<td>boz  [ boz ] off white</td>
<td></td>
</tr>
<tr>
<td>don  [ dɔn ] freeze</td>
<td>dost [ dost ] friend</td>
<td></td>
</tr>
<tr>
<td>fok  [ fɔk ] seal</td>
<td>ðoz  [ ðɔz ] doze</td>
<td></td>
</tr>
<tr>
<td>fon  [ fɔn ] foundation</td>
<td>koz  [ kɔz ] advantage</td>
<td></td>
</tr>
<tr>
<td>kof  [ kɔf ] weak</td>
<td>post [ post ] animal skin</td>
<td></td>
</tr>
<tr>
<td>[ kont. next column]</td>
<td>poz  [ poz ] pose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>toz  [ toz ] dust</td>
<td></td>
</tr>
<tr>
<td>öç</td>
<td>.vaadin</td>
<td>revenge</td>
</tr>
<tr>
<td>-----</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>öl</td>
<td>şağl</td>
<td>die</td>
</tr>
<tr>
<td>ölc</td>
<td>şağlıv</td>
<td>measure</td>
</tr>
<tr>
<td>böl</td>
<td>şoşel</td>
<td>divide</td>
</tr>
<tr>
<td>çol</td>
<td>şoşel</td>
<td>desert</td>
</tr>
<tr>
<td>göc</td>
<td>şoşelv</td>
<td>migration</td>
</tr>
<tr>
<td>göl</td>
<td>şoşel</td>
<td>lake</td>
</tr>
<tr>
<td>köşk</td>
<td>şoşç</td>
<td>mansion</td>
</tr>
<tr>
<td>köy</td>
<td>şoj</td>
<td>village</td>
</tr>
<tr>
<td>ön</td>
<td>şon</td>
<td>front</td>
</tr>
<tr>
<td>öp</td>
<td>şop</td>
<td>kiss</td>
</tr>
<tr>
<td>ör</td>
<td>şop</td>
<td>knit</td>
</tr>
<tr>
<td>öt</td>
<td>şot</td>
<td>sing</td>
</tr>
<tr>
<td>öv</td>
<td>şov</td>
<td>praise</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>oz</th>
<th>şov</th>
<th>essence</th>
</tr>
</thead>
<tbody>
<tr>
<td>gök</td>
<td>şokc</td>
<td>collapse</td>
</tr>
<tr>
<td>göz</td>
<td>şokə</td>
<td>solve</td>
</tr>
<tr>
<td>dök</td>
<td>şök</td>
<td>pour</td>
</tr>
<tr>
<td>gök</td>
<td>şoč</td>
<td>sky</td>
</tr>
<tr>
<td>göz</td>
<td>şoç</td>
<td>eye</td>
</tr>
<tr>
<td>sök</td>
<td>şoč</td>
<td>pull out</td>
</tr>
<tr>
<td>söz</td>
<td>şoç</td>
<td>speech</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>çöp</th>
<th>şopport</th>
<th>rubbish</th>
</tr>
</thead>
<tbody>
<tr>
<td>dön</td>
<td>şonpt</td>
<td>come back</td>
</tr>
<tr>
<td>dort</td>
<td>şopat</td>
<td>four</td>
</tr>
<tr>
<td>dov</td>
<td>şopay</td>
<td>beat</td>
</tr>
<tr>
<td>gom</td>
<td>şonpt</td>
<td>bury</td>
</tr>
<tr>
<td>gör</td>
<td>şonpt</td>
<td>see</td>
</tr>
<tr>
<td>kör</td>
<td>şonpt</td>
<td>blind</td>
</tr>
<tr>
<td>sön</td>
<td>şonpt</td>
<td>extinguish</td>
</tr>
<tr>
<td>sov</td>
<td>şonpt</td>
<td>swear</td>
</tr>
<tr>
<td>yön</td>
<td>şonpt</td>
<td>direction</td>
</tr>
<tr>
<td>bu  [ buː ]</td>
<td>this</td>
<td>kurt  [ kʊrt ]</td>
</tr>
<tr>
<td>br  [ buːz ]</td>
<td>find</td>
<td>nur  [ nʊr ]</td>
</tr>
<tr>
<td>qul  [ ˈʔuːl ]</td>
<td>garment</td>
<td>ruh  [ rʊx ]</td>
</tr>
<tr>
<td>dur  [ dʊl ]</td>
<td>widow</td>
<td>sun  [ sʊn ]</td>
</tr>
<tr>
<td>duṣ  [ duːʃ ]</td>
<td>shower</td>
<td>sur  [ sʊr ]</td>
</tr>
<tr>
<td>dui  [ dʊi ]</td>
<td>hear</td>
<td>qul  [ ˈʔuːl ]</td>
</tr>
<tr>
<td>huy  [ xuː ]</td>
<td>habit</td>
<td>qut  [ ˈʃuːt ]</td>
</tr>
<tr>
<td>kul  [ kuː ]</td>
<td>servant</td>
<td>tur  [ tʊr ]</td>
</tr>
<tr>
<td>kulp  [ kuːlp ]</td>
<td>handle</td>
<td>turp  [ tʊrp ]</td>
</tr>
<tr>
<td>kuṣ  [ kuːʃ ]</td>
<td>bird</td>
<td>tut  [ tʊt ]</td>
</tr>
<tr>
<td>pul  [ puːl ]</td>
<td>stamp</td>
<td>um  [ ūm ]</td>
</tr>
<tr>
<td>su  [ suː ]</td>
<td>water</td>
<td>un  [ ūn ]</td>
</tr>
<tr>
<td>suq  [ suːq ]</td>
<td>guilt</td>
<td>ur  [ uːr ]</td>
</tr>
<tr>
<td>šu  [ ʃuː ]</td>
<td>that</td>
<td>ut  [ ʊt ]</td>
</tr>
<tr>
<td>tuq  [ tuːq ]</td>
<td>plume</td>
<td>vur  [ vʊr ]</td>
</tr>
<tr>
<td>tuq  [ tuːq ]</td>
<td>knock out</td>
<td>yum  [ jʊm ]</td>
</tr>
<tr>
<td>uq  [ uːq ]</td>
<td>fly</td>
<td>yurt  [ juːrt ]</td>
</tr>
<tr>
<td>uy  [ uː ]</td>
<td></td>
<td>yut  [ juːt ]</td>
</tr>
</tbody>
</table>

| but  [ but ]  | thigh  | buz  [ buːz ]  | ice |
| burq  [ buːɾq ]  | sign of the zodiac  | kus  [ kʊs ]  | throw out |
| dur  [ dʊɾ ]  | stop  | mum  [ mʊm ]  | candle |
| dut  [ dut ]  |  | muz  [ mʊz ]  | banana |
| kum  [ kʊm ]  | sand  | sus  [ sʊs ]  | be quiet |
| kunt  [ kʊnt ]  | strong  | tuz  [ tʊz ]  | salt |
| kur  [ kuːɾ ]  | wind  | us  [ ʊs ]  | intelligence |

cont. next column
<table>
<thead>
<tr>
<th>Ü Group Vowels</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>güç [f`u:]</td>
<td>difficult</td>
<td></td>
</tr>
<tr>
<td>gül [fy:`]</td>
<td>rose</td>
<td></td>
</tr>
<tr>
<td>kul [cy:`]</td>
<td>ash</td>
<td></td>
</tr>
<tr>
<td>tul [ty:`]</td>
<td>lace</td>
<td></td>
</tr>
<tr>
<td>tuy [ty:]</td>
<td>feather</td>
<td></td>
</tr>
<tr>
<td>üç [y`:]</td>
<td>three</td>
<td></td>
</tr>
<tr>
<td>dünn [dy:`]</td>
<td>yesterday</td>
<td></td>
</tr>
<tr>
<td>dür [dy:]</td>
<td>wrap up</td>
<td></td>
</tr>
<tr>
<td>dürt [dy:]</td>
<td>touch</td>
<td></td>
</tr>
<tr>
<td>hür [gy:]</td>
<td>free</td>
<td></td>
</tr>
<tr>
<td>gün [fy:]</td>
<td>day</td>
<td></td>
</tr>
<tr>
<td>gür [fy:]</td>
<td>strong</td>
<td></td>
</tr>
<tr>
<td>gütt [fy:]</td>
<td>direct</td>
<td></td>
</tr>
<tr>
<td>küf [cy:]</td>
<td>mould</td>
<td></td>
</tr>
<tr>
<td>künk [cy:]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>küp [cy:]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kür [cy:]</td>
<td>diet</td>
<td></td>
</tr>
<tr>
<td>küt [cy:]</td>
<td>broad</td>
<td></td>
</tr>
<tr>
<td>sûr [sy:]</td>
<td>drive</td>
<td></td>
</tr>
<tr>
<td>sört [sy:]</td>
<td>rub against</td>
<td></td>
</tr>
<tr>
<td>süt [sy:]</td>
<td>milk</td>
<td></td>
</tr>
<tr>
<td>tüm [ty:]</td>
<td>all</td>
<td></td>
</tr>
<tr>
<td>tüp [ty:]</td>
<td>tube</td>
<td></td>
</tr>
<tr>
<td>tüür [ty:]</td>
<td>variety</td>
<td></td>
</tr>
<tr>
<td>tüüt [ty:]</td>
<td>smoulder</td>
<td></td>
</tr>
<tr>
<td>ün [y:]</td>
<td>fame</td>
<td></td>
</tr>
<tr>
<td>yün [jyr:]</td>
<td>wool</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX III
bangır — indicates very loud shouting
bicik — stickiness, mostly in connection with jam, etc.
bip — indicates hooting
bum — an explosion
cart — tearing cloth, etc.
cayır — burning
ciyak — shrill voice
ciz — usually a painful injection, or a burn on the skin
çizir — indicates sizzling
cup — object falling into a liquid, usually water
çat — indicates banging of a door
çangır — clanking
çın — indicates an echo
çingır — ringing of a bell, etc.
çit — crack
cuf — indicates noise of an engine
dan — a metallic banging noise
düüt — indicates sound of a whistle
fakır — boiling
faşir — rapid flow of water
fikir — boiling gently
fildir — rapid circling movement
firil — indicates whirling
fis — indicates whispering, air escaping very slowly
fisıl — indicates whispering
fisır — indicates swelling on the skin
fiş — indicates a hissing or rustling sound
fişir — bubbly
fingir — indicates a swaying motion
fis — indicates hollowness
foşur — inhaling deeply
foş — indicates flushing of water
gak — indicates belching
gık — a barely heard utterance
gacır — creaky
gıcır — squeaky
gurul — indicates rumbling
gülür — gushing
güm — indicates a heavy fall
gümüş — a thundering noise
gürel — indicates strong flow of water
haldir — indicates rough behaviour
hapir — eating in haste
haril — indicates state of being in haste
hart – indicates biting fiercely
hatir – " being unripe
haşir – " rustling
hik – indicates a hiccup
him – " a nasal twang
haşir – " a rustling noise or rough skin
hişt – calling to attention or to keep quiet
hop – indicates jumping
hor – " snoring
homur – " grumbling
horul – " snorting
hopur – " drinking something noisily
höt – boo
hüngür – indicates crying
hüp – gulp
katir – indicates hardness, to become hardened
Kimil – indicates continuous movements
kipir – indicates stirring
kış – shoo
kuqu – used in calling a dog
kufür – indicates coolness
küt – bang
kütür – indicates freshness and firmness
mir – indicates humming
miril – indicates mumbling
miril – indicates sleeping deeply
lakir – indicates swallowing
langır – " movement of something bulky
likir – indicates drinking quickly to quench one’s thirst
lök – indicates slumping
löp – " things in a bulk
löpur – " eating noisily
lüp – indicates gulping
pat – " the noise of a heavy fall
patir – indicates the noise of footsteps
pir – indicates fluttering of wings
piril – indicates shimmering
pirt – bulging
pirt – bulging
pisi – for calling a cat
pit – indicating a barely heard noise
pof – indicates a soft explosion
pof – " an unpleasant smell
puf – indicates to swell suddenly
püf – " blowing out candles, etc.
Pufür – breezy
rap – indicates marching
şak – " clapping
şakir – " a heavy rainfall
şangır – " breaking of glass, etc.
qikir — indicates rainfall
qangir — " shaking of cups, glass, etc.
qarin — " noise of water flowing gently
tak — indicates hammering something
takir — indicates a lot of noise
tik — indicates tapping lightly on wood mainly doors
tikir — " manner of walking causing a continuous but light noise, on high heels
tin — indicating hollowness
tingir — indicates a metallic noise
tip — indicates dropping of water from a tap at regular intervals
tis — " silence
tiril — " thinness
zangir — " strong trembling
zangir — " shaking
zink — indicates jerking
zip — " jumping up and down
zir — " ringing of a doorbell
zaril — " persistent, complaining voice
zart — " doing things suddenly, without a warning
zonk — " throbbing
vicik — " stickiness, mostly in connection with oil, mud
vin — indicates noise of a flying bullet, arrow, etc.
vịyak — " screaming of a baby
viz — " buzzing, also excessive speed
vizil — " vibrating noise
vizir — " swiftness
yuvar — " roundness
Bibliography

The following is not an exhaustive bibliography, but it is intended to provide a basic background reading for this work. Those marked with * are the books and articles which the writer found of particular relevance to the preparation and writing of the thesis.

Abercrombie, D. Elements of General Phonetics, Edinburgh, 1967

Aksoy, Ö.A. Gaziantep Agzi, Istanbul, 1945


Banguoğlu, T. Türk Grameri, Birinci Bölüm, Ses Bilgisi, Ankara, 1959


Firth, J.R. * Sounds and Prosodies, TPS, 1948, 127 - 152

* Word-palatograms and Articulation, BSOAS, Vol. 12, 3 and 4, 1948, 857 - 864


Nevşehir ve Yöresi Ağızlara, Ankara, 1963
Lees, R.B.  
The Phonology of Modern Standard Turkish, Indiana University Publications, Uralic and Altaic Series, Vol. 6, 1961

Lewis, B.  
The Emergence of Modern Turkey, Oxford 1961

Lewis, G.I.  
* Turkish Grammar, Oxford, 1967

Robins, R.H.  
The Phonology of the nasalized verbal forms in Sundanese, BSOAS, Vol. 15, 1953, 138 - 145

* Aspects of Prosodic Analysis, PUDPS, series B Arts 1, 1957, 1 - 12


Swift, L.B.  

Sebüktekin, H.I.  
Turkish - English Contrastive Analysis, The Hague, 1971

Waterson, N.  
* Some Aspects of the Phonology of the nominal forms of the Turkish word, BSOAS, Vol. 18, 1956, 578 - 591

Some Speech Forms of an English Child, TPS, 1970

The Palatogram Figure
B. Winnick

Zones

<table>
<thead>
<tr>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Molar Line</td>
<td>....</td>
</tr>
<tr>
<td>3rd Molar Line</td>
<td>....</td>
</tr>
<tr>
<td>2nd Molar Line</td>
<td>....</td>
</tr>
<tr>
<td>1st Molar Line</td>
<td>....</td>
</tr>
<tr>
<td>Canine Line</td>
<td>....</td>
</tr>
<tr>
<td>Lateral Incisor Line</td>
<td>....</td>
</tr>
<tr>
<td>Incisor Line</td>
<td>....</td>
</tr>
</tbody>
</table>
SONAGRAPh GRID

<table>
<thead>
<tr>
<th>FREQUENCY IN HERTZ</th>
<th>85</th>
<th>750</th>
<th>500</th>
<th>250</th>
<th>1K</th>
<th>1.5K</th>
<th>2K</th>
<th>2.5K</th>
<th>3K</th>
<th>3.5K</th>
<th>4K</th>
<th>4.5K</th>
<th>5K</th>
<th>5.5K</th>
<th>6K</th>
<th>6.5K</th>
<th>7K</th>
<th>7.25K</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME in 0.10 Seconds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>