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# THE PHONOLOGY OF TURKISH

ÖNER ÖZÇELİK

word stress

phrasal prominence

feet

vowel harmony

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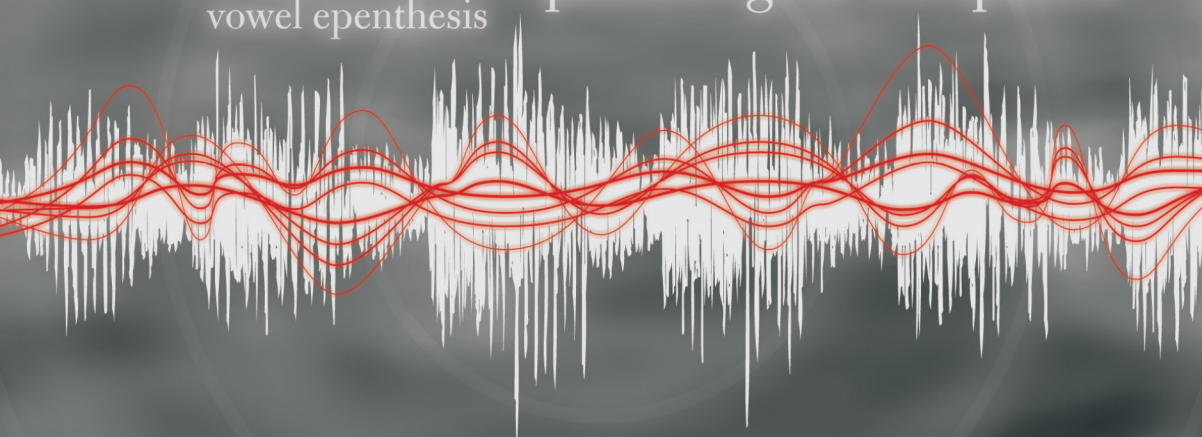
prespecification

consonant clusters

syllable repair processes

phonological exceptions

vowel epenthesis



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# The Phonology of Turkish

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# The Phonology of Turkish

ÖNER ÖZÇELİK

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# 1

## Introduction

*The Phonology of Turkish* offers a comprehensive account of the phonological structure of modern Turkish. It focuses on the standard (Istanbul) variety of Turkish, while acknowledging variation in the language, and at times, also referring to processes from other dialects and other Turkic languages as relevant, thereby situating the standard Turkish data along a spectrum, making conclusions about language universals at the same time. While phenomena at both segmental and suprasegmental levels are discussed, the emphasis is on the latter, analyzing phonological processes extending over a number of different domains. In doing so, and couched within a primarily constraint-based framework, lower-level prosodic constituents, including syllables, feet, and prosodic words, are incorporated into a general theory with higher-level constituents, the Phonological Phrase and the Intonational Phrase, assuming that phonological structure is hierarchical in nature and that phonological representations consist of more than a single linear sequence of segments.

The approach employed here, thus, uses tools from both Prosodic Phonology and Autosegmental Phonology (theories of representation), as well as Optimality Theory (OT) (a theory of computation). An adequate theory of phonology, whether to describe a specific language or explain the principles that underlie all languages, after all, needs both. More specifically, with regard to the representation of the internal structure of segments, Autosegmental Phonology, and in some cases a more refined variant, Feature Geometry, is used, while Prosodic Phonology is employed for levels of the Prosodic Hierarchy beyond the segment, such as feet, prosodic words, and phonological phrases. In the most general sense, the book strives to achieve two things; it provides a critical synthesis of research in Turkish phonology, as well as offering new analyses and data in a theoretically oriented approach, while at the same time striving to avoid promotion of a specific theoretical or formal framework fixed in advance.

One repetitive and overarching theme emerging in every chapter throughout the book is that not only regular but also exceptional phonological forms demonstrate a systematic pattern, despite conveniently being referred to as “exceptional,” and can be captured by the same grammar as regular forms,

be it a segmental process (Chapter 2), a syllable repair process (Chapter 3), vowel harmony (Chapter 4), word stress (Chapter 5), or phrasal prominence (Chapter 6). I maintain that exceptional information in phonology should be captured via prespecification, but of a special type that puts minimal information in underlying forms, such as specifying foot edges only for exceptional stress (and letting the grammar assign the various properties of that foot on the surface), as opposed to various other alternatives. Prespecification of the type defended here does not place language-specific restrictions on inputs/underlying representations; rather, inputs can have any shape, and all possible inputs are accounted for by the same grammar/phonology. Phonology on this view essentially acts as a filter to only give surface representations that are actually utterable by speakers of the Turkish language.

This approach not only captures regular and exceptional forms in a unified manner, regardless of what phonological processes are being addressed, but also accounts for gaps in the data, which would otherwise have to be dismissed as accidental, despite presenting certain clearcut patterns. In other words, not only is what is happening in the data accounted for, but also what is not happening, presenting a rather restrictive—and falsifiable—theory of phonology.

## 1.1 The Turkish language

### 1.1.1 General characteristics and linguistic affinity

With roughly 90 million native speakers, Turkish is the most widely spoken member of the Turkic language family, which has some 200 million speakers across more than 40 (generally mutually intelligible) languages. The speakers of Turkish are distributed mostly across Western Asia, especially the Anatolian Peninsula, the westernmost extension of Asia, and Southeastern Europe, especially the Eastern Thrace, the easternmost extension of Southern Europe. The Anatolian Peninsula, also known as Asia Minor, is surrounded by the Black Sea to the north, the Mediterranean Sea to the south and the Aegean Sea and the Turkish Straits to the west, and comprises the bulk of modern Turkey, a transcontinental country. Eastern Thrace, which is geographically the European part of Turkey and the eastern tip of the Balkan Peninsula, also surrounded by seas on three sides, is much smaller in size, but contains a large population, including Turkey's (and Europe's) biggest city, Istanbul, which straddles the Bosphorus strait, between Europe and Asia, and comprises

roughly 20% of the country's population, which is approaching 90 million. Turkey has lands to the east and southeast of the Anatolian Peninsula as well, the latter of which has a sizable ethnic minority, the Kurds, most of whom are also bilingual speakers of Turkish.

In addition to being the sole official language of Turkey, where most of its speakers are concentrated, Turkish has official status in a number of nearby countries, such as Cyprus, Macedonia, and Kosovo, and has significant populations across the entire Balkan Peninsula (especially in Bulgaria and Greece) and the Middle East (especially in Iraq and Syria), as well as a number of other countries that formerly belonged to the Ottoman Empire. In addition to these minority populations in former Ottoman territories, there are sizable Turkish-speaking populations in Western European countries, due to recent immigration, most notable among which are Germany, Austria, the Netherlands, France, and Belgium.

The Turkish language is closely related to more than forty documented members of the Turkic language family, which are spoken across a vast geographic area, spanning from Eastern and Southern Europe in the west to Siberia and the Arctic Ocean in the north and the Great Wall of China in the east, and concentrated especially around Central and Western Asia. While the internal genetic relationship between the members of the Turkic language family has been well-established, the question of what other languages Turkic languages are externally connected to is still controversial. The most widely accepted affiliation is one that places Turkic languages under the Altaic language family, together with Mongolic (spoken in Mongolia, parts of China and Russia) and Tungusic languages (spoken in Siberia and Northern China). According to some scholars, the Altaic family also includes Japonic and Koreanic languages, which show striking—particularly syntactic—similarities to Turkic languages. Accordingly, certain ongoing conferences on Altaic languages, such as the annual Workshop on Altaic Formal Linguistics, takes the term “Altaic” to refer to all of these languages, including Japanese and Korean. An even more expanded version, called the Ural-Altaic Hypothesis, additionally incorporates the members of the Uralic family, including Estonian, Finnish, and Hungarian, which show striking—particularly phonological—similarities to Turkic languages. All of these expanded versions, including the core Altaic Hypothesis, remain highly controversial, and the question is left as to whether the similarities are due to a genetic relationship or areal influence originating from having lived together for hundreds of years.

The Turkish language is mutually intelligible with many other Turkic languages, especially those belonging to the Oghuz (southwestern) branch of the

Turkic family, which includes Azerbaijani (spoken in Azerbaijan and Iran), Gagauz (spoken in Moldova, Ukraine, and Russia), and Turkmen (spoken in Turkmenistan, Iran, Iraq, and Afghanistan), among others. Other major branches of the Turkic family include Kipchak/northwestern (e.g. Kazakh, Kyrgyz, Tatar), Karluk/southeastern (e.g. Uzbek, Uyghur, Chagatai), and Siberian/northeastern (e.g. Sakha/Yakut, Tuvan, Khakas, each spoken in their respective republics in Russia named after their language). These four groups are all under the Common Turkic branch of Turkic languages, which are generally called among speakers of Turkish and Turkic languages as “Turkish languages” (as opposed to “Turkic languages”), or even frequently as the *lehçes* of Turkish, which is a term that is closer to a dialect than a language. The distinction between Turkish and Turkic is, thus, not Turkish/Turkic in origin, but is instead a terminological innovation originated in the West, specifically among English-speaking scholars. In addition to the languages represented under the Common Turkic branch, which are mostly mutually intelligible with each other, albeit to varying degrees, there is also a distant relative, under the Oghuric branch of Turkic, whose only surviving member is Chuvash (spoken in Chuvashia, Russia), which once included Bulgar and Khazar, in addition to arguably Hunnish, the language that was spoken by the leaders of the Huns in the Hunnic Empire (between the fourth and sixth centuries).

### 1.1.2 Historical development

The immediate ancestor of the Turkish language is the Ottoman (i.e. *Osmanlı*) branch of the Oghuz Turkic languages, which represented the variety of Turkish used in the late Ottoman Empire (1299–1922), or colloquially the Turkish Empire, which extended from Central and Eastern Europe to Western Asia and the Middle East, as well as North Africa, dominating over a vast geographic area. The Ottoman Empire itself rose from the ashes of the Seljuk (i.e. *Selçuklu*) Empire, which extended from the Himalayas in the east to the Anatolian Peninsula in the west, as well as its Anatolian successor the Sultanate of Rum (*Anadolu Selçuklu*), which was the main target of the Crusades and eventually succumbed to the Mongol invasions in thirteenth century. The Seljuk Turks were the people who originally brought Oghuz Turkish to Anatolia after defeating the (Eastern) Roman Empire in a decisive victory at the Battle of Manzikert (*Malazgirt*) in 1071 under the leadership of Alp Arslan.

The Ottoman Turkish, arising from the ashes of the Seljuk Turkic was, according to many scholars, composed of three major dialects, *Rumelian* (spoken in the European parts of the Ottoman Empire), *Anatolian* (spoken in the Asian parts of the Ottoman Empire), and *Crimean* (spoken in Crimea, which is located today in Ukraine). Standard Turkish, as spoken in Turkey today, is based on the Istanbul dialect, which stood at the intersection of the Anatolian and Rumelian, with features from both.

The earliest known Turkic documents are the memorial installations called the “Orkhon Inscriptions,” which were erected in the early eighth century by the Göktürks (Celestial Turks) in honor of two Göktürk princes in an area which is located today in modern Mongolia. The Göktürk Empire was the first empire in history to use the word Turkish (i.e. *Türk*) in its name. The language of these documents was Old Turkic, and they were written using the Old Turkic Script, a runic alphabet that was later adapted to write other Turkic and non-Turkic languages, such as Old Uyghur and Old Hungarian.

The origins of the Old Turkic (Orkhon) script are unknown, although some scholars argue that it is descended from the older writings of the Xiongnu (third century BC to second century AD), whose carved characters dating from centuries ago were identical or similar to the letters of the Orkhon script. The Xiongnu themselves have been argued by some to be related to the Huns (or at least certain groups of Huns), as suggested by both archaeogenetic information and the Chinese and Indian sources, and (versions of) their name may in fact have been a cognate with that of the Huns, who may have moved westward after the collapse of their original empire.

There is convincing linguistic evidence that the leaders of the Huns spoke a Turkic language based largely on the phonological analysis of their names (Beckwith, Özçelik & Shimunek, *in progress*). But this was not the only major (possibly) Turkic move to the West prior to Seljuk Turks’ arrival in Anatolia. There was a major “Turkic expansion” between the sixth and eleventh centuries, starting with the earlier years of the Göktürk Empire in Central Asia. Various peoples speaking Turkic languages started to spread across Central Asia during this time, eventually covering a vast geographic area from Siberia in the north and Europe and the Mediterranean in the west to China in the east, in addition to parts of the Middle East. The direct ancestor of modern standard Turkish, the Oghuz Turkic, was brought from Central Asia to Anatolia (the bulk of modern Turkey) during the latter parts of this expansion, in eleventh century, by the Seljuks of the Oghuz Turks.

### 1.1.3 Influence from other languages and language reforms

Having adopted Islam already back in Central Asia in the tenth century, a large number of loanwords from the Arabic and Persian languages entered the administrative, legal, and literary language of the Seljuk Empire, the ethnic and cultural ancestor of the Ottoman Empire, and eventually of modern Turkey. Other Turkic empires back in Central Asia also went through a similar process of their own, to varying degrees.

The Turkish language during the Ottoman period (1299–1922), especially the poetry and other literary works produced for the Ottoman palace and court circle (called the *Divan* literature), was particularly influenced by Arabic and Persian. This influence was so strong that the Ottoman language, especially the official variety spoken in the palace circles, was widely viewed to be a “mixture” of Turkish, Persian, and Arabic. It was thus largely unintelligible to less educated citizens of the empire, who lived in rural areas, formed the great majority of Ottoman Turks, and spoke Turkish with a much larger percentage of words with Turkic origin. In other words, although the Turks were the founders and the governing entity of the empire, the Ottoman language was no longer a medium of communication comprehensible to them, although it likely played some kind of a unifying effect at the same time, helping incorporate the rising number of Arabic-speaking citizens of the empire, especially after the sixteenth century, as the empire extended to most of the Middle East and North Africa, areas with predominantly Arabic speakers, having initially established itself in Anatolia and the Balkans, the lands that previously belonged to the Eastern Roman Empire.

Although the Ottoman palace literature was not comprehensible for the average Turk, folk and mystical literature also developed in rural areas in Anatolia, following its own unique path, parallel to the development of court literature. This latter type of literature was written in plain Turkish intelligible to the Turks of the time, and still remains comprehensible for speakers of modern Turkish today. Some of the well-known leaders of this type of literature include the famous folk poet and mystic Yunus Emre of the thirteenth century, and the singer-poet Karacaođlan of the seventeenth century, whose works are read and understood in elementary schools across Turkey, as opposed to the palace literature, which is largely incomprehensible, even if belonging to more recent centuries.

Due to the fact that the standard palace language was inaccessible for the average Turk within the Ottoman Empire, and somewhat inspired by the nationalism movements occurring elsewhere in Europe, a number of Ottoman

writers and scholars started to call for the “purification” of the Turkish language. As a result, during the final century of the Ottoman Empire, a movement started toward using a language with more native Turkic elements, one that was not too “embellished” with foreign words and grammatical features. This undertaking gained steam during the final decades of the empire, at the same time as the empire was rapidly losing its lands with majority non-Turkish population (Arabs, Bulgarians, Greeks, Romanians, Serbians, etc.).

Parallel to this was the emergence of a newly found awareness of ethnic identity among Turkish scholars, who started to define themselves once again as Turkish, as opposed to Ottoman. It was also during this time when the first Anatolian Turkish dictionary was published, i.e. the *Lehçe-i Osmani* (The Ottoman Dialect) by [Ahmet Vefik Pasha \(1877\)](#). This is significant, first of all because it reflects how the Turkish/Ottoman language during the time was viewed as a variant of a greater “Turkish” (or “Turkic” in the Western sense) language. Second, it also demonstrates that, at the same time, and despite growing attempts at using native Turkic elements by scholars, the name of the dictionary itself employed a Persian construction commonly used at the time, whereby the head noun (“dialect”) precedes the dependent (“Ottoman”), despite the fact that Turkish, as with all Turkic languages, is a strictly head-final language (nouns follow adjectives; it uses postpositions, as opposed to prepositions; its word order is subject-object-verb, etc.). The construction written in modern Turkish, or the language of many rural Turks of the time, would have been *Osmanlı Lehçe-si*, with the head noun *lehçe* (dialect) as the final element in the phrase.

The drive toward the purification of the language intensified approaching the final few years of the Ottoman Empire, encouraged by the movement of the Young Turks, constitutionalist revolutionists against the absolute rule of the emperor, during their multi-party democracy starting with the Second Ottoman Constitutional Era of 1908, right before the empire joined the First World War under their newly found leadership (and swiftly came to an end thereafter). During their short reign, a number of societies were formed promoting the newly found ethnic identity among Turks, resulting in further purification of the language, this time expunging grammatical elements of Arabic and Persian origin of the type still permitted during the purification efforts a few decades earlier (such that even the first Turkish dictionary had had a Persianized title then).

The language reform movement culminated and reached its height shortly after the Republic of Türkiye, the successor of the Ottoman Empire, was founded in 1920–1923 on what remained from the lost lands of the empire,

the predominantly Turkish-speaking areas, after the First World War. The first years of the new republic were marked by a series of reforms, introduced by Mustafa Kemal Atatürk, the founder of modern Turkey. Many of these targeted the language. Perhaps most importantly, in 1928, a Latin alphabet was introduced to replace the Perso-Arabic-based Ottoman Turkish alphabet, as one of Atatürk's reforms. A few years after this, in 1932, the Turkish Language Association (*Türk Dil Kurumu*) was formed, again under the patronage of Atatürk. One of the missions assigned to this association was to initiate and spearhead a "language reform," one that would replace loanwords of Arabic and Persian origin with their native Turkish or Turkic equivalents. As a result, and with the open help of the state and the media, numerous Turkish words of foreign origin were banned from the press, books and magazines. Instead, new words were rapidly introduced by the association to replace them; some of these were derived from existing Turkish words using existing rules of Turkish morphophonology, while others were either taken from local words used in rural areas in Anatolia or were revivals of Old Turkic words that had not been used for centuries, drawing upon vocabulary from ancient epics and other literary works of long gone Central Asian Turkic states.

The efforts of the association have largely succeeded, much unlike such undertakings in other countries, and the words coined by the association have in most cases received widespread acceptance. To date, the association continues to coin new Turkish words, as new concepts and technology enter the life of modern Turks. Although many of these new coinages are found to sound too "artificial" by the general public, many others continue to meet popular approval, as indicated by the fact that modern Turkish is one of the few languages in the world productively using native vocabulary for a recent technological innovation like "computer," i.e. *bilgisayar* ("knowledge calculator" literally) (Özçelik 2016b). Regardless of the recent approval rate, the association's original efforts at the time when the new republic was established were strikingly successful. This success was perhaps in part due to the fact that the "embellished" language of the Ottoman palace had not mostly been adopted by the average people in the first place, and that the language revolution, in many cases, replaced such words with those used by actual people in rural Turkey, much unlike other "purification" efforts in the world.

On the other hand, many words of Arabic and Persian origin that had already been in common use by regular people were never abandoned (despite efforts by the association to do so), leaving many synonymous words in the language, as with the Arabic [kelime] *kelime* and Turkish [sözđzyk] *sözcük* "word," or the Arabic [hajat] *hayat* and Turkish [jaJam] *yaşam* "life." The presence of these words is highly significant phonologically, as we will see throughout this

book. For example, in the case of [hajat], the underlying representation is, in fact, /haja:t/, but the word appears without a long vowel in the nominative dictionary form on the surface, i.e. [hajat], but still with a long vowel when a vowel-initial suffix is added, i.e. [haja:t-a] “to the life.” This is because Turkish places a ban on rhymes with more than two positions. As such, even though closed syllables and long vowels are permitted separately in Turkish, the two cannot co-occur in the same syllable. Similar effects are observable in other areas of phonology as well; many Turkish words of Arabic origin underlyingly permit more options than is allowed on the surface by Turkish phonology.

## 1.2 Orthography

Although this book is not about pronunciation or Turkish spelling conventions, a few words must be said about the Turkish orthography, because having an understanding of the Turkish alphabet will have a number of practical uses. It will, first of all, arm researchers with the basic tools to analyze Turkish words and create their own stimuli, e.g. when working with Turkish-speaking consultants, especially since the Turkish alphabet is rather phonemic in and of itself (and, in some cases, phonetic). Additionally, since much phonological work on Turkish simply uses the Turkish orthography, instead of e.g. the International Phonetic Alphabet (IPA), given the almost perfectly phonemic nature of the former, it will help researchers to have a better insight into phonological work on Turkish in general and ensure comparability across different publications.

Turkish uses a modified Latin alphabet, adopted in 1928 (see Section 1.1.3), and consisting of twenty-nine letters, of which twenty-one denote consonants, and the remaining eight symbolize vowels. The alphabet is rather phonemic, and, given its recent adoption, in general, it does a great job in providing a one-to-one correspondence between graphemes and phonemes, except for a few cases that involve loanwords with underlyingly palatalized consonants, which will be outlined later. The Turkish alphabet has been the model for the Latinization of various Turkic languages which were previously written in Cyrillic or Arabic alphabets, as with Azerbaijani (1991), Turkmen (1993), and Kazakh (2023).

Most letters representing Turkish sounds approximately have the same value as they do in the IPA, be it consonants or vowels (i.e. /a, b, d, e, f, g, h, i, k, l, m, n, o, p, r, s, t, u, v, z/), whereas some are unique Turkish adaptations (e.g. use of <c> for /d͡ʒ/), and seven are modified from Latin, often with diacritics, to address the phonetic requirements of the language (i.e. <ç, ğ, ı, İ, ş, ö, ü>).

When a letter has a version with and without a diacritic, the version with diacritics follows its plain counterpart in order in the alphabet. The entire Turkish alphabet is provided in Table 1.1, in the Turkish order of the letters. The letter symbol is, thus, presented first, followed by the IPA phoneme it corresponds to and a list of its major allophones, as well as example words illustrating these sounds, both in Turkish orthography and in IPA. When a phoneme has more than one major allophone, these are also listed and are exemplified.

**Table 1.1** The Turkish alphabet

Letter	Phoneme	Major alloph.	Examples	IPA	Gloss
a A	/ɑ/	[ɑ, ʌ, a]	at, araba	[ɑt, araba]	“horse, car”
b B	/b/	[b]	bal	[baɫ]	“honey”
c C	/d͡ʒ/	[d͡ʒ]	cam	[d͡ʒam]	“glass”
ç Ç	/t͡ʃ/	[t͡ʃ]	çam	[t͡ʃam]	“pine”
d D	/d/	[d]	dil	[dil]	“tongue”
e E	/e/	[e, ɛ, æ]	et, er, kene	[et, ɛr, keɛ]	“meat, man, tick”
f F	/f/	[f, φ]	fes, yufka	[fes, juφka]	“hat, phyllo”
g G	/g, gʲ/	[g, gʲ]	gaz, gül	[gaz, gʲyl]	“gas, rose”
ğ Ğ	/ɰ/	[ɰ, ɣ, Ø]	dağ	[daɰ, da:, day]	“mountain”
h H	/h/	[h, x, ç, Ø]	huy, ahmak, hiç	[huɰ, axmak, çit͡ʃ]	“temper, fool, any”
ı I	/u/	[u]	ırmak	[uɪrmak]	“river”
î İ	/i/	[i, ɪ]	ikiz, kedi	[ikiz, keɖi]	“twin, cat”
j J	/ʒ/	[ʒ]	jet	[ʒet]	“jet”
k K	/k, kʲ/	[k, kʲ]	kol, kel	[koɫ, keɫ]	“arm, bald”
l L	/l, lʲ/	[l, ɫ, lʲ]	leke, hala, zil	[leke, haɫ, ziɫ]	“dirt, aunt, bell”
m M	/m/	[m]	muzur	[muzur]	“prankster”
n N	/n/	[n, ɲ, ɲ]	nar, yonga, dingil	[naɾ, joŋɣa, diŋgil]	“pomegranate, chip, axle”
o O	/o/	[o]	ocak	[oɖzak]	“fireplace”
ö Ö	/ø/	[ø]	öküz	[økyz]	“ox”
p P	/p/	[p]	pırasa	[pɪrasa]	“leek(s)”
r R	/r/	[r, ɾ]	resim, yer	[resim, jɛɾ]	“picture, place”
s S	/s/	[s]	su	[so]	“water”
ş Ş	/ʃ/	[ʃ]	şarap	[ʃarap]	“wine”
t T	/t/	[t]	tuz	[tuɫ]	“salt”
u U	/u/	[u, ø]	un, uyku	[un, ujkø]	“flour, sleep”
ü Ü	/y/	[y, ɣ]	ün, örgü	[yn, ørgy]	“fame, braid”
v V	/v/	[v, β, w]	veri, vurgu, avuç	[veɾi, βurgø, awut͡ʃ]	“data, stress, palm”
y Y	/j/	[j]	yaşam	[jaʃam]	“life”
z Z	/z/	[z]	zarf	[zarf]	“envelope”

This is quite a comprehensive presentation, although the reader is referred to Chapter 2 for a more detailed exposition of which phoneme (and, by extension, grapheme) corresponds to which consonant (Section 2.2) or vowel sound(s) (Section 2.3) depending on context, as all Turkish phonemes and their major allophones are analyzed in detail in that chapter.

A few words must be said here about a number of special cases: First, although Turkish in general has a one-to-one correspondence between letters and phonemes, this is not always the case. Accordingly, while a single phoneme is listed in the second column as corresponding to almost all the letters in Table 1.1, two different phonemes are listed for three of them, i.e. <g, k, l>. These listed forms normally display an allophonic variation, as is indicated under the third column, as with many other Turkish sounds. This variation is between their palatalized and non-palatalized versions (or, in the case of /l/, between light- and dark-l), with palatalized variants appearing in front vowel contexts and non-palatalized versions in back vowel contexts, as with e.g. [bæɫ] “waist” vs. [bɑɫ] “honey.” However, due to borrowings, a palatalized variant of these consonants can also (“exceptionally”) appear in a back vowel context, as with e.g. [sol] “musical note” (or rather [solʲ] as is explained in Chapter 4), in which case it is contrastive with the dark/non-palatalized /l/, resulting in minimal pairs with regular words such as [sol] “left.” There are, however, very few cases of this type, especially involving <k, g>. The phonology behind this allophonic variation, which has recently taken a phonemic turn for some words, will be explained in detail in Chapter 2, where segmental phonology is addressed, as well as later in Chapter 4, where vowel harmony is analyzed, as these consonants (palatalized versions appearing in back vowel contexts) block vowel harmony, resulting in a theoretically interesting pattern.

<ğ>, or “soft-g,” as Turks call it, is another special case. This letter used to correspond to the velar fricative /ɣ/ in old times, and is still pronounced that way in some parts of Turkey, especially in the east. However, in most Turkish dialects, including in the standard Istanbul dialect, it is deleted (thus, “Ø” is given in Table 1.1 as one of the possible contextual variants), which then often results in compensatory lengthening or hiatus. When actually pronounced in careful speech, it corresponds to the velar glide /ɯɣ/ in most varieties, including in the standard language. <ğ> is theoretically intriguing for many reasons, and never appears in word-initial position. It is analyzed as ambisyllabic in this book, and is revisited in various sections throughout the book, given especially its implications for Turkish syllabification and such phonological processes as compensatory lengthening and hiatus resolution. Similar deletion processes, though less prevalent, target three other sounds, which, along with the sound

corresponding to <ğ>, are all analyzed as glides here, i.e. [h, j, w], a conclusion that will be sketched out in detail in Chapters 2 and 3.

Another interesting case is the contrast between the dotted <i> and its undotted counterpart <ı>. While the former is front, the latter is back, as with the dotted-undotted contrast observed between <ö> vs. <o> and <ü> vs. <u>. What is interesting here is that the capital letter version of dotted <i> is also dotted, i.e. <İ>, and the capital letter for the undotted <ı> is also undotted, i.e. <I>. Note that this—normally neat—contrast usually results in confusion among learners of Turkish, because in most Western European languages like English, the undotted <I> is the capital letter version of dotted <i>. Further, most European languages do not have a sound corresponding to the phoneme /w/ that the undotted <ı> denotes. Note also that the dotted version of each vowel always comes immediately after its undotted version in alphabetical order, e.g. <i > immediately follows <ı>; <ö> immediately follows <o>, and so on.

Another important point to note is that the Turkish alphabet does not indicate stress or vowel length (unless derivationally triggered, see following). For stress, neither regular (word-final) prominence, nor exceptional (non-final) stress that appears in certain words is denoted in orthography. Thus, /jyz-mé/ “swimming” and /jýz-me/ “Don’t swim.” are written in the same way, i.e. as <yüz-me>, although the noun making suffix -me attached to the first word is regular, while the negation suffix -me attached to the second word is exceptionally pre-stressing, that is, despite the contrastive nature of stress. Likewise, vowel length is not represented in writing, unless a vowel is long because of compensatory lengthening, e.g. of the type caused by deletion of <ğ> and other glides described before, in which case the relevant letter is still kept in writing, as with [da:] being written as <dağ>. However, if a word has a long vowel because it is a loanword (Turkish does not otherwise have underlyingly long vowels), as with [va:li], there is nothing in the spelling that denotes vowel length: <vali>.

Finally, it should be noted that most phonological processes, including vowel harmony, final devoicing, consonant assimilation processes, various forms of insertion and deletion (syllable repair processes), which will all be covered throughout this book, are all represented orthographically in Turkish, which often masks a word’s underlying representation. For example, with regard to final devoicing, the word [tat] “taste” is written as <tat>. When a vowel-initial suffix, e.g. the accusative, is attached to this word, the final consonant appears voiced, i.e. [tad-u], which is indicated in the orthography as well, i.e. <tadı>. This gives good guidance as to how a word should be

pronounced. What is missing, however, is insight into the underlying representation of a given word; although the motivation for the alternation between [t] and [d] here is clearly (syllable-final) devoicing (as opposed to the application of a syllable-initial voicing rule), and /tad/ is, thus, the underlying representation of the word, one may get the false image that the dictionary form *tat* must be the underlying representation. This is unlike the situation in some other languages with final devoicing, such as German, where the nominative/dictionary/null form of the word has the voiced/underlying variant (despite undergoing final devoicing on the surface).

### 1.3 Theoretical background

In the broadest sense, the framework this book is couched in can be stated to be generative phonology, according to which all human language, regardless of its genetic origins, is hard-wired in the same way into the brain at birth. While certain principles apply in every language, such as every language having syllables and prosodic words, languages are assumed to differ across certain well-defined spectra, such as feet being left- or right-headed, but not ever middle-headed. As a child acquires their native language, the correct settings that apply to the target language (e.g. left- or right-headed feet) are activated.

It has been a hallmark of generative phonology to distinguish surface representations (outputs of the grammar) from the more abstract underlying representations (inputs to the grammar) in an effort to model the internalized linguistic knowledge of native speakers, a practice that I will follow in every chapter throughout this book, regardless of the specific representational framework used in a given chapter. The formal relationship that exists between these two levels of representation will be accounted for via the operation of a number of universal constraints, rather than rules, thus largely following the Optimality Theory (see e.g. Prince & Smolensky 1993; Kager 1999; McCarthy & Prince 1995, 1999 for introductory work).

In Optimality Theory, there are in general two different types of constraints: faithfulness constraints and markedness constraints. While the former require that the outputs match the inputs, thereby striving to ensure perfect identity between surface and underlying representations, the latter, markedness constraints, motivate changes from the underlying representations in an effort to create more unmarked—and thus usually simpler—outputs. Further, in Optimality Theory, while constraints are universal, in that every language

has the same set of constraints, languages differ in how they rank these constraints. In the case of complex onsets, for example, whereas both English and Turkish can have them in underlying representations, since Turkish ranks the markedness constraint that bans their appearance higher than the faithfulness constraint that requires keeping the input forms as is in the output, there are no complex onsets in the language on the surface. In English, on the other hand, complex onsets can be found across the board; this is despite the fact that English also has the same markedness constraint against complex onsets, but it ranks it below the faithfulness constraint that ensures identity between the input and the output; so the impact of the said markedness constraint is not evident on the surface in English. Thus, Turkish and English differ in the way they rank these constraints (and not in that one constraint works only in one language).

Optimality Theory is not, however, a theory of representations, and is compatible with various representational approaches to phonological phenomena, depending on what it is that is being represented; for example, the representational approach could differ based on whether one is focused on an analysis at the segmental level, e.g. with respect to the assumptions about the internal structure of segments and distinctive features comprising them, or the organization of prosodic constituents, e.g. prosodic words being headed by feet and feet by syllables. The analyses of segmental phonology in this book initially make use of a rather neutral framework in introducing all the phonemes and allophones of Turkish vowels and consonants in Chapter 2, employing a broadly generativist framework (see e.g. [Kenstowicz 1994](#) for essential background). Representations, then, gradually become more complex throughout the book.

In Chapter 3, where the concept of the syllable and syllabification is analyzed, the non-linear Autosegmental Phonology (see e.g. [Goldsmith 1976](#), [Clements 1976](#), [Roca & Johnson 1999](#) for introductions) is used and introduced, and then, in analyzing vowel harmony in the following chapter, Chapter 4, a specific version of Autosegmental Phonology, namely Feature Geometry, is employed, as well as introduced (see e.g. [Clements 1985](#), [Clements & Hume 1995](#) for essential publications and more in-depth introductions). Feature Geometry is more refined than most autosegmental approaches to phonology, and is particularly helpful in representing feature spreading processes that are essential to vowel harmony, as well as in reflecting the local nature of vowel harmony since vowel features are placed on a tier that is lacked by consonants. This accounts for the transparency of consonants to vowel harmony, as well as demonstrating that, despite apparently involving

long-distance relations, as consonants are often skipped, vowel harmony is a local process, as with other phonological processes, given that it involves adjacent features on a tier that is specific to vowels, to the exclusion of (most) consonants.

Finally, representations of phonological structure beyond the segment are based on basic notions of syllable structure and the Prosodic Hierarchy as proposed in Prosodic Phonology (see e.g. Nespor & Vogel 1986, Selkirk 1996, 2011 for introductions), according to which prosodic constituents are universal and are hierarchically arranged. Although some of the assumptions of Prosodic Phonology will be challenged in this book, e.g. the universality of the foot, its tools will be widely used throughout the book. This applies to both the in-depth analyses of the syllable and syllabification provided in Chapter 3, as well as for the levels higher than the syllable, such as the foot, prosodic word, Phonological Phrase, and the Intonational Phrase, the first two of which (i.e. lower-level constituents) are analyzed in Chapter 5 in proposing an OT-based account of word stress and intonation in Turkish, and the latter two (higher-level constituents) later in Chapter 6, in accounting for phrasal and sentential prominence in Turkish. Additionally, as higher-level prosody lies at the interface of phonology and syntax, some syntactic frameworks are also employed in this chapter, most notably the Antisymmetric approach to syntax (Kayne 1994).

Regardless of the chapter, phonological phenomena analyzed, or the representational framework used, one particular theme comes up repeatedly throughout the book, i.e. that exceptions in phonology often have a rule-governed (i.e. systematic) behavior, and that exceptional forms should be captured through prespecification, as opposed to other theoretical alternatives. Crucially, although exceptional information on this account is encoded in the input, this information makes its way to the surface not through strict faithfulness to it, but by correspondence-based prosodic faithfulness constraints (McCarthy & Prince 1995, 1999). Take, as an example, exceptional stress (Chapter 5): I maintain that the information that is prespecified in the input is not stress or a stressed syllable or a trochaic (or iambic) foot, but instead—and solely—the *edges* of a foot. This foot does not have to be a perfect foot (and should not be), and it does not have to be the foot that eventually surfaces. It can have any shape imaginable (e.g. one syllable footed in the input, two syllables footed, unfooted syllables, etc.), in accordance with the OT concept Richness of the Base (Prince & Smolensky 1993). In other words, I assume throughout the book that there are no constraints on underlying representations. For word stress and feet, then, the well-formedness of an underlying

foot, as well as which information belonging to this foot will appear on the surface, is all dictated by the grammar through correspondence-based constraints. Nothing is specified in the input beyond foot edges, and regular and exceptional forms are not subject to different grammars. The same grammar that accounts for regular cases also accounts for exceptional cases. One advantage of this approach, among others, is, thus, that stipulations are avoided, since there is no requirement for perfect identity between input and output forms, given that certain kinds of imperfections are permitted while others are banned (McCarthy 2000a, b). Thus, cross-linguistic variation is truly limited to constraint ranking in a rather restrictive (and falsifiable) manner (whether the focus is on regular or exceptional forms), and certain types of gaps in the data can be accounted for, avoiding the overgeneration problem that many alternative analyses face.

Finally, as phonology is a rather formal discipline, loaded with technical jargon, it was not possible within the scope of this work to provide definitions of concepts and explanations of all frameworks assumed. It is presumed that basic notions of phonological analysis are known. Nevertheless, it should be noted that in presenting analyses throughout the book, I have made every effort to explain essential concepts first, especially for those beyond the segmental level. For example, when analyzing syllable structure in Chapter 3, I have presented introductory information on the basic notions of syllable structure and syllabification. In Chapter 4, in analyzing vowel harmony, I have presented an introduction to the Feature Geometry. In Chapters 5 and 6, where lower- and higher-level prosody are respectively analyzed, I have provided a basic introduction to Prosodic Phonology and various constituents of the Prosodic Hierarchy, as well as walking the reader in a step-by-step manner through the OT-based analyses.

## 1.4 An overview of this book

This book is organized in the following way: Chapter 2 is on segmental phonology, analyzing all Turkish consonant and vowel phonemes, as well as their major allophones. Tools of both phonetics and phonology are employed here in drawing a complete picture of the Turkish sound inventory and their contextual behavior.

Chapter 3 is about the syllable and syllabification. While defining the various constituents of the syllable in Turkish and demonstrating the restrictions

on them, a number of major phonological processes are also introduced here, e.g. various forms of vowel epenthesis, vowel shortening, degemination, compensatory lengthening, hiatus (and its resolution). Most of these—and the “exceptions” to them—are argued here to have a syllable-based motivation in that they are syllable repair processes.

Chapter 4, then, addresses vowel harmony in Turkish, as well as exceptional non-harmonic cases, within a primarily Feature Geometric approach. Both the affixal vowel harmony observed in native words and the harmony of the type found in epenthetic vowels used in repairing the syllable structure of certain loanwords (which is leftward in some cases, as opposed to the rightward suffixal harmony) are analyzed, as well as cases where certain consonants block vowel harmony. A unified account is presented, treating regular and exceptional cases, as well as all major types of vowel harmony, in the same manner and with the same grammar.

Chapter 5 is on word stress and prominence, focusing on the foot and the prosodic word, lower-level constituents of the Prosodic Hierarchy. Both regular and (various different types of) exceptional word stress are accounted for here, using a detailed OT-based framework, which, in many ways, illustrates most of the components of the theoretical framework employed throughout this book. For example, it shows in a detailed way that there are no language-specific restrictions on inputs, and that regular and exceptional forms can be captured through the same grammar.

Finally, Chapter 6 delves into higher-level prosodic constituents, i.e. the Phonological Phrase and the Intonational Phrase and outlines the way phrasal and sentential prominence are assigned in Turkish, as well as explaining the role of syntax in doing so, while discussing facts at the syntax-prosody interface.

Every chapter is presented with an introduction and a conclusion. Thus, for a more detailed overview of what topics are covered in each chapter, the reader is encouraged to read the introduction sections. Reading the conclusion sections of each chapter could, in a similar way, present a quick overview of what analyses and novel proposals are made in each chapter.

# 2

## Segmental phonology

### 2.1 Introduction

In this chapter, I present an overview of the sounds of modern Turkish, including both consonants and vowels, along with their associated phonetic characterizations and the alternations they display. This will also be accompanied by an overview of some of the major phonological processes in Turkish that take place at the segmental level. The description of Turkish sounds to be employed in this chapter is rather crucial since both the segmental processes to be outlined in this chapter and certain suprasegmental phenomena to be covered in the following chapters, such as vowel harmony, will rely on this information. In addition, we will clarify the status of certain sounds in Turkish, for example proposing a total of four glides (three of which phonemic) for Turkish, as opposed to the standard view of recognizing the presence of a single phonemic glide in the language.

We will start with a discussion of Turkish consonants (Section 2.2), followed by vowels (Section 2.3). In both sections, we will address the segmental processes associated with a sound while at the same time covering the phonetic properties of that sound, thereby outlining all the major allophones of each speech sound. Phonological processes in Turkish are not, however, limited to those to be covered in this chapter; many of them, where the syllable functions as the domain of phonological rules or restricts the occurrence of certain segments, are addressed in the next chapter (Chapter 3), which is on the syllable. Still, some of the processes to be covered in this chapter, such as the bilabialization of fricatives, require some very basic knowledge of the syllable, as will be illustrated later.

### 2.2 Consonants

The consonants of Turkish are presented in Table 2.1. As is usual with consonant charts, this chart organizes consonants by place of articulation (shown by columns) and manner of articulation (shown by rows). In addition, a third

contrastive feature, voicing, is relevant for Turkish obstruents (stops, affricates, and fricatives), for which, unlike sonorants (nasals, liquids, and glides), this feature is contrastive. All Turkish obstruents, with the exception of /h/ (whose status as an obstruent is debatable, see the following) can be voiced or voiceless; thus, two sounds are given in each obstruent cell in the table (as with /p/ and /b/ under bilabial stops), and in these cases, the first one (/p/ in this example) is voiceless, while the second (/b/ in this example) is voiced.

**Table 2.1** The consonants of Turkish: phonemes

	Bilabial	Labio-dental	Alveolar	Palato-alveolar	Palatal	Velar	Glottal
Stops	p b		t d			k g	
Affricates				tʃ dʒ			
Fricatives		f v	s z	ʃ ʒ			
Nasals	m		n				
Liquids			r l				
Glides					j	ɥ	h

This chart represents all the phonemic consonants of Turkish (i.e. those that contrast). Additionally, many of these have allophones, depending on the environment they occur in, as will be illustrated later in this chapter. For example, the velar consonants /k/ and /g/ are palatalized in the environment of front vowels. Likewise, labio-dentals are bilabialized in certain environments that involve rounded vowels. Again, depending on the backness of the surrounding vowels, /l/ can surface either as a light-l or as a dark-l.<sup>1</sup>

In what follows, we will overview the consonants of Turkish one by one, while presenting minimal pairs when relevant. We will do this following an order based on manner of articulation. We start with stops.

### 2.2.1 Stops

Turkish has three sets of voiced and voiceless stops: bilabial stops /p, b/, alveolar stops /t, d/, and velar stops /k, g/. These stops are distributed neatly in the vocal tract respectively from the most front (bilabials, involving the lips) to the

<sup>1</sup> Note that, as will be explained later, in the case of /l/, there is also an interesting situation that does not follow expected patterns (yet is easily explicable with prespecification); a palatalized light-l can also be a phoneme of its own, when underlyingly specified as such, in certain borrowed words.

most back (velars, involving the velum), with alveolars (involving the alveolar ridge) lying in between.<sup>2</sup> Further, unlike many other languages (including many Turkic languages, such as Kazakh and Kyrgyz), Turkish does not have glottal stops (though see the following), or any other sound that is produced further back than the velum (except possibly for /h/, which is likely placeless, as explained later).

The examples (1) through (3) respectively illustrate bilabial, alveolar and velar stops in various environments (syllable-initial, syllable-final and inter-vocalic):

- |            |        |         |          |
|------------|--------|---------|----------|
| (1) a. tep | b. baz | c. para | d. tabak |
| kick.IMP   | basis  | money   | plate    |
| (2) a. ata | b. ada | c. ot   | d. dut   |
| ancestor   | island | grass   | mulberry |
| (3) a. kaz | b. gaz | c. tek  | d. ege   |
| dig.IMP    | gas    | only    | Aegean   |

As is demonstrated by the presence of minimal pairs, both voicing and place of articulation are contrastive. For the former, compare (2a) with (2b) or (3a) with (3b); the two word sets here differ only by the medial consonant's voicing features, and this leads to a meaning difference; whereas the former word means "ancestor" in (2), the latter means "island." For the latter, compare (1b) with (3b); here, the two words differ only by the fact that the first one has a bilabial (voiced stop) whereas the second has a velar (voiced stop); that is, place of articulation is contrastive.

Although voicing is contrastive in the case of Turkish stops, this contrast is neutralized in word-final position; in other words, with the exception of a handful of words (which are mostly, but not exclusively, borrowed), voiced stops cannot appear in word- (or even syllable-) final position. Examples of exceptions (which are all monosyllabic) include: /ab/ "water," /rab/ "the Lord," /ad/ "name," /ud/ "lute," /lig/ "league," /dijalog/ "dialogue." To put it another way, there is a devoicing rule in Turkish which bans voiced stops (and affricates) in syllable-final position. This process will be addressed in more detail later in Chapter 3.

An interesting fact that must be mentioned at this point, however, is that all of these "exceptions" are borrowed words, with the sole exception of /ad/ "name" to my knowledge (see also /od/ "fire", which is an archaic word). One may then ask why this one is allowed. Although it would not be wise to make

<sup>2</sup> Note that as some authors have previously pointed out (e.g. Kornfilt 1997; van der Hulst & van de Weijer 1991), Turkish alveolar stops are more to the front than their English counterparts, having quite some dental character.